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"POWERFUL AMERICA"

By GEORGE BRONSON REA

A MILESTONE IN HISTORY

Vol. XXXII

MARCH, 1936

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As Captain of the Japanese Cruiser "Akitsushima," he joined with Chichester, the British Squadron Commander, and stood between Dewey and von Dietericks in Manila Bay. The American Navy has not Forgotten.



ADMIRAL VISCOUNT MAKOTO SAITO

A Gallant Sailor, A Greater Statesman, a Grand Liberal, a Maker of Modern Japan. From the bottom of the ladder he climbed by sheer merit to the Premiership and Lord Keeper of the Privy Seal. He died at 78, full of years and full of honors, a Sacrifice on the Altar of his Country. A World Grieves with Nippon.

The Far Eastern Review

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"POWERFUL AMERICA"

What Will She Do in Asia?

I.—THE FUNCTION OF THE BUFFER STATE

Can Japan Invoke the Same Laws of Self-Preservation that Great Britain, Russia and the United States have Promulgated and Applied for the Defense of their Respective Interests?

By GEORGE BRONSON REA

Why Roosevelt Recognized Soviet Russia

The Washington government has reasserted our Asiatic policies and has prepared to uphold them. So states Mr. Eugene J. Young on the first page of his realistic analysis of the international problems confronting the United States, published under the title of *Powerful America*. Many books on similar and correlated problems have appeared in recent years, but for a frank American point of view, free from bias and propaganda, Mr. Young's treatment of his thesis, compels attention. The author is peculiarly well equipped to handle his subject. As Telegraph Editor of the *New York Times*, 1902-09, Telegraph and News Editor of *The World*, 1913-30, Cable Editor of the *New York Times* since 1931 and for fifteen years writer of a syndicated weekly article on world politics, the news of the world has passed under his scrutiny and blue-pencil, giving to him a working knowledge of all the vital situations in international politics during this period. To this advantage must be added a familiarity with those "off the record" stories which, for reasons of state, are too often concealed for years from the public.

As an example of this, Mr. Young discloses the Memorandum of the late Mr. Adolph Ochs, President of the New York Times Company, on the origins of the Washington Conference, which we commented on in our January issue. This revelation alone should convince Americans of how the policies of their Government have been shaped and guided from the outside by playing upon our fears of Japan on the one hand and appealing to our ideals, our love of justice, peace, democracy, etc., on the other.

As long as we have leaders of thought who for one reason or another, subordinate their Americanism to the interests and policies of other nations, we must expect to become embroiled in quarrels which do not vitally concern us. Something of what this means is revealed in the recent charges of Representative George H. Tinkham to the effect that our delegation at the London naval conference is headed by a "fanatical partisan of the League of Nations, dominated by British influence." Although these charges in no way detract from the special qualifications and fitness of our representatives abroad they do strengthen a general and growing conviction that the United States is sadly in need of a fundamental revision of its foreign policies, a shakeup in its diplomatic service and a newer and stricter interpretation of what constitutes 100 per cent Americanism.

The urgent necessity of a revision of our foreign policies is emphasized in Mr. Young's book where he reveals for the first

time why President Roosevelt recognized Soviet Russia, citing it as a concrete example of the possibilities of making our voice decisive whenever we choose to raise it. Mr. Young says:

Late in the summer of 1933 two large Japanese armies were gathered for "maneuvers." One, with heavy equipment of artillery and other modern weapons, mobilized near Tsuruga; the other, largely composed of cavalry, near Niigata. It happened that these were the home ports of the steamship lines running to northern Korea and Vladivostok and were the designated embarkation points for expeditions that might have to fight Russia. Word reached Washington that these "maneuvers" were really the cover for the mobilization of an invading army and that the Japanese militarists intended to take Vladivostok before that harbor was frozen. The excuse, indicated by Japanese propaganda at the time, was to be that Japan was acting against the "Red menace" and in the interests of all the nations opposed to Communism.

At that critical moment President Roosevelt made a gesture which was never fully appreciated in this country because the background could not be revealed. He invited Soviet Russia to send a delegation to Washington to arrange for recognition of the Moscow regime. His action had a tremendous effect in Japan. It was interpreted as a notice that we would disapprove any attack on Russia. A great council was held by the Emperor and his advisors in the midst of the maneuvers near Tsuruga. The outcome of the discussion was a defeat for the militarists, a victory for the Japanese moderates and a complete change in Japanese policy. General Sadao Araki, chief of the forward militarist movement, was forced into retirement and Koki Hirota, the Foreign Minister, gained approval for a policy of "Diplomacy first" and of conciliation of America, Russia and China. In other words, Japan did not care to risk American intervention in a conflict with Russia.

Tokyo and Moscow will place their own interpretation on this story. To Moscow it conveys an assurance that in the event of war with Japan, the United States will be on its side, encouraging it to broadcast further bellicose proclamations and provoke additional border incidents. Considered in conjunction with our past interventions in the Far East, public opinion in Japan will be confirmed in the belief that American policy is definitely set against any attempt on the part of Japan to defend itself against a menace that on two past occasions has compelled it to stake its existence in a test of strength and is again burdening the nation with taxation to be prepared to meet the next thrust of Russian imperialism.

What Japan Cannot Forget

Intent upon their own domestic affairs, Americans are not keenly interested in the conduct of their foreign relations. They are prone to forget events that become fixed in the memory of another people whose cherished ambitions or measures of defense have been thwarted as a result of those events.

The Japanese remember our interest in Manchuria subsequent to the Russo-Japanese War expressed through the activities of Harriman and Straight and the dollar diplomacy of Knox; they recall our note of 1915 refusing to recognize any impairment of our treaty rights in Manchuria arising from the Sino-Japanese treaties of that year. They have a lively recollection of an American Army that crossed the Pacific under sealed instructions to keep them from being compensated by a slice of Siberian territory for occupying Vladivostok and keeping the Trans-Siberian Railway open for the Allies. They have on record our notification that we would not recognize any impairment of the territorial or political independence of Siberia. They have now a fuller cognizance of the reasons behind the Washington Conference, called to create a balance of power under treaties which held them strictly to account while Soviet Russia was presented with a charter of license to do as she pleased in Asia. They have pondered deeply over the significance of Wilson's rejection of their claim to racial equality at Paris when a majority of the committee of Thirteen voted in its favor. They resent our refusal to concede to them naval equality and feel insulted by our Exclusion Act.

The meaning of an anti-war pact which secured for every nation but Japan the right to wage war on their own account in self-defense, has been hammered into them, and they now understand why the Stimson-Geneva Doctrine refusing to recognize the results of their appeal to the law of self-preservation was promulgated before an investigation could establish the facts. When, to all these evidences of a policy to confine them in a watertight compartment, they are informed by a competent American authority that President Roosevelt deliberately recognized Soviet Russia at the moment when Japanese military maneuvers in their own territory were construed as the mobilization of an army for the invasion of Siberia, it is tantamount to an admission that the Commissars of the New Deal lost no time in coming to the aid of their spiritual Homeland. And, as we read the political speeches arraigning the Roosevelt Administration for its incitement of class warfare and revolution, and then turn to the arguments in defense advanced by those exercising vast governmental powers, in phrases taken bodily from the testaments of Marx and Lenin, the impression becomes almost a conviction that there exists a very close understanding somewhere along the line between Washington and Moscow that is committing the American people to another adventure in which they have no vital concern other than a desire for world peace.

Obviously, a diplomatic secret of such vital bearing on current international relations, overstrained ones at that, would never have been permitted to leak out from the White House or the State Department. If true, someone close to the President has been guilty of a breach of confidence and, in view of the charges now so openly preferred by their political opponents against high officials of the government, it conveys the impression that the link between Washington and Moscow is much stronger than anyone suspects. However, it is more likely and nearer the truth, that the story is simply another piece of Soviet propaganda manufactured out of whole cloth for home consumption and conveyed to *The New York Times* by its unusually active and well-informed correspondent in Moscow. Or, Mr. Young from his vantage post at the *Times* telegraph desk may have deduced this conclusion from piecing together the news of the day.

Reaction of the Japanese Army

General Staffs are very much the same the world over, alike in their methods of thought and modes of preparing against a hypothetical enemy. The old rule of logic and arithmetic holds good. Two and two make four. The above story of what for all practical political purposes reveals a close understanding between Moscow and Washington, published almost simultaneously with Senator Pittman's bellicose anti-Japanese utterances, President Roosevelt's message to Congress, Mr. Roy Howard's pronouncement of Japan's aggressive designs on the Philippines, and other alarming disclosures at the precise time when the Manchoukuo-Mongolian-

Soviet border troubles are growing more and more difficult of solution, when the Chinese Reds have broken through Chiang Kei-shek's cordon, contacted with the Soviet in Mongolia and occupied parts of Shansi and Suiyuan, when it is now openly confirmed that the province of Hsinking is completely dominated by the Soviet, when Moscow with a £40,000,000 British credit and further financial assistance from France, is feverishly working night and day in Arctic weather to rush through its military preparations in the Trans-Baikal and Amur regions, and Stalin is announcing a determination to go to war if the hidden and mysterious republic of Mongolia is opened to international intercourse and his commissars of war are openly defying Japan, it is conceivable that the Japanese Army may have reacted in the only way that any other self-respecting fighting force might be expected to do under similar conditions. For, underneath the many explanations of what motivated the leaders of the recent military revolt in Tokyo was the firm conviction of the Army that the vital security and interests of the Empire were being sacrificed. This is not a defense of wholesale assassination, but is stated merely to indicate something of the natural reaction of any fighting force in the face of cumulative evidence of what it may have to face in the not distant future if present conditions are permitted to drift in the hope of some amicable settlement of problems which almost defy diplomatic treatment.

Why Japan is Apprehensive

The Japanese Army may or may not have violated treaties when in sheer desperation it acted in defense of the interests entrusted to its protection in Manchuria. The case against Japan for the violation of treaties falls flat in any unbiased analysis of the reservations and resolutions which lead up to and interpret the treaties.

To reject the right of self-defense advanced by the Japanese Army, cast a stigma on its honor, condemn it of premeditated aggression and hold over it the menace of a suspended sentence, while open preparations are being made on the part of several interested Powers to compel respect for the verdict of the League, reinforced by admission to membership of a former outlaw state whose policies forced Japan's hand, and then to be told that the American Government reversed its policies to recognize that outlaw state at the precise moment when the Japanese Army was engaged in working out a transportation problem as part of its offensive or defensive tactics, leaves nothing to the imagination.

Japan is being penalized because of the failure of statesmen to agree upon the meaning of the terms of their treaties and because they have set up a myth and endowed it with sovereignty and refuse to listen to any argument or facts that might change their one-sided verdict. Overweening pride of authorship and of sponsorship, political and human reluctance to confess error, together with other considerations of trade, balance of power, fear, envy and jealousy, are working against any modification or repeal of these agreements or a reversal of the verdict of Geneva. In fact, it may be said, that because of this refusal to reconsider the facts, the case against Japan has perceptibly hardened, until we are now seriously informed by spokesmen for the League that sanctions against Italy are merely the curtain-raiser to the greater drama that is to follow in the Orient.

On all sides the evidence keeps piling up of a concerted plan to apply pressure upon Japan as soon as the preparations now being carried out are completed. It is superfluous here to go into details, except to restate that aside from naval and aerial preparations, the Soviet army in the Far East now outnumbers the standing army of Japan by over 70,000 men, without counting the two million and a half more or less organized and efficient Chinese troops. For months, the Soviet Far Eastern army has been creating border incidents, instigating revolt in Manchuria, supplying bandits with arms and throwing the blame on Japan while its leaders have boasted of what they intend to do under given conditions.

Any army confronting such conditions, can hardly be expected to reason from the viewpoint of the diplomat or the pacifist. The best way to right things may be through diplomacy or a conference, but until there is some indication that the League verdict against Japan is not to be enforced, some sign that the attitude of the United States is softening, some evidence that China is willing to enter into direct negotiations for a settlement of outstanding disputes and above all, some guarantee that Soviet Russia will reduce its Far Eastern armies and desist from further aid to the

Reds of China, the Japanese Army faces the realities of the moment. So tense is this situation, so full of possibilities and so fraught with grave consequences to the Empire should a false step be made at this juncture, that the Japanese Army Chiefs are insistent upon their right to scrutinize and approve the members of the New cabinet now in process of selection under the leadership of Mr. Koki Hirota.

Among other reasons, the military leaders incline to the belief that the more liberal-minded diplomats lack a full understanding of the realities of the situation and hesitate to contribute a War Minister to the cabinet unless they are sure that the premier-designate and his colleagues appreciate fully a situation which demands sustained vigilance, adequate defense and the will to enforce national policies with vigor. In other words, the army is forcing a showdown, willing that diplomacy and liberalism be permitted full scope to carry the Empire through the crisis, but determined not to be caught unprepared, should peaceful methods prove unavailing.

The Japanese Army has undoubtedly made many mistakes in the past few years but the nation to a man stands behind what it has done in Manchuria. Japan will never recede from Manchoukuo. The world insists that Japan has embarked upon a program of empire. That may or may not be true. But at the same time, it is true that it has embarked upon a program of defense, realizing that if it relaxes its vigilance or reduces its strength, the day when it will again have to stake its existence on the plains of Manchuria, cannot be long deferred.

British Methods

The Japanese Army or its Government can have no illusions about what it has to face. Mr. Koki Hirota promised the nation that there would be no war while he was Minister for Foreign Affairs. Now that he has been elevated to the Premiership, he faces a difficult and trying task that will tax his diplomacy and statesmanship to make good on his declared policies. He faces a sceptical world, propagandized into believing that his messages of goodwill and peaceful intent are merely the screen behind which preparations are being pushed for further penetration into China and the creation of new independent blocs.

It is a remarkable picture that confronts us. What Great Britain and Soviet Russia can do in Asia without comment or censure, is denounced as a crime against international law and decency when resorted to by Japan. For there is no difference between the fundamental policies of Japan and Great Britain. Both are motivated by a fear of Russia. Both nations have had to fight wars to guard their possessions against this menace. For the last year or so a British army has been engaged in ferocious border warfare with the Afridi tribes in order to firmly establish that girdle of semi-independent states considered by Britain essential for the defense of India against the methodical advance of Russia. Baluchistan, Afghanistan and Kashgaria in Chinese Turkestan, have been set apart to fulfil this function of defense. While the world press is full of stories about Japan's defensive moves in Northern China, the British have quietly advanced their frontier outpost to Gilgit in the Karakorum, within striking distance of Kashgar. This new base is connected with the south by new motor roads assuring communications with the main British army in India proper. It is significant that while Moscow is loudly berating and challenging Japan, it remains mute about what is transpiring along another sector of its far-flung boundaries. Stalin is taking no chances with his great and good imperialistic "tovarish" while he pockets the proceeds and benefits of his forty million pound credit. Soviet agents in Hsinking are careful to leave the Kashgar and Yarkand districts severely alone, permitting a small amount of trade to trickle over the Karakorum to preserve the illusion of Hsinking's freedom from their dominance.

The following extract from an article by Colonel C. E. Bruce in the *Indian Empire Review* explaining the war on India's North-West frontier, will help to explain what the Japanese Army has to contend against.

"Our failure in the Mohmand country was, therefore, not as suggested, due to our having gone too far, but in our not having gone far enough. . . . to have commenced a road into the Afridi country and then at the first threat to have stopped it, must inevitably have been construed by the clans as due to fear and weakness. For men who always 'despise you for

your weakness, rather than admire you for your benevolence,' the lesson must have had far-reaching results, showing as it did that violence succeeded where other methods had failed. . . . In dealing with Pathans the famous inscription on a Persian scimitar 'Draw me not without a cause, sheathe me not without honor,' has its lesson."

In those words, Colonel Bruce restates Asiatic psychology towards benevolence, conciliation and straightforward diplomacy, the attitude of mind which resulted in the failure of Baron Shidehara's trustful policies and which still persists to defeat any attempt to apply League or liberal principles to disputes in Asia. Should a similar explanation be advanced by a high Japanese official to defend his Government's program in North China, the world would unite in unanimous condemnation of an army which adhered to such a medieval conception of settling disputes. And yet, what the British are facing on India's North-West frontier as the result of their adherence to League and pacifist principles, is exactly what the Japanese Army is contending against in the Mongolian borderlands, inhabited by peoples of the same mentality and what Premier Hirota is expected to overcome by the application of a benevolent program towards a nation that will *despise him for his weakness* should he recede from the three principles laid down as the basis for a settlement of outstanding disputes.

That Japanese Propaganda Bogey

Japan, as usual, is placed on the defensive. She cannot counteract this world-wide propaganda disseminated from Moscow by Tass and a host of foreign correspondents writing under a severe censorship which compels them to accept without reservation the Soviet side of the case and cable it to their newspapers where it invariably receives front-page treatment. Japan, like Germany during the World War, is being crushed between the rolls of the English-language propaganda machine. For years, the process of blackening her character and impugning her motives has been relentlessly pursued in the hope that, if and when war breaks, she will stand alone, a pariah, without a friend in the world. The marshalling of world opinion against this Nation, instigated and kept alive by the speeches of responsible foreign statesmen and Heads of Governments has now become a favorite international pastime. Japan has built up no adequate defense. Despite all reports to the contrary, she has no centralized publicity director or machinery for presenting her case, aside from the tri-weekly press conferences where a junior diplomat, very ably, it must be said, assumes the rôle of Spokesman for the entire Government.

Japan has neither the machinery, the experience, the technique nor the understanding of western psychology to successfully combat a campaign which is undermining and nullifying her diplomacy. Russia, America, the League and especially China, always score at her expense. Conscious of the rectitude of their policies and firm in the belief that the world in time will realize the sincerity and justice of their cause, the Japanese drift along in the hope that diplomacy and assurances of peaceful intent will solve their problems. This indifference to what in other countries has become one of the most important functions of government will impose its own penalties as time goes on.

II.—The Way of the Muscovite

It becomes a law in Russian history that every time Russia finds herself checked in Europe she intensifies her drive into Asia. Her approach to her objective is like an army investing a fortress, slow, steady and sure. In the same manner that she laid her preparations for the conquest of India in the 'seventies of the last century by building the Orenburg-Irtish line, followed by the Krasnovodsk-Tashkent railway and was hammering on the gates of Herat before the British could hold her in check, so to-day she is pursuing the same clocklike tactics. Curbed in Europe and confronted by a vigilant Britain whose advance base is now at Gilgit in the Hindu Kush, Russia is once more intensifying her drive to subjugate China preliminary to placing Japan in vassalage.

Slowly, cautiously, but determinedly, she is carrying forward her plans with mechanical precision. First the Turk-Sib railway, then the double-tracking of the Trans-Siberian, followed by the first Five Year Plan with its huge steel works and munitions plants in the Ural and Altai regions, then the second Five Year Plan for

the double-tracking of the Amur line and the building of an entirely new parallel line in the north, while sending out spurs and tentacles from the main system to the Mongolian borderline and beyond, absorbing Mongolia, Kuldja, and the major part of Hsinking, holding these regions as closed Russian preserves in which no foreigner can reside, travel or do business, in exactly the same manner that she closed Bokhara first and then all Central Asia to conceal her advance towards India from the outside world.

Her system never varies. She started the Chinese Reds on the war-path and is now assisting them to overthrow the recognized faction at Nanking. She has garrisoned an army of 300,000 in the Amur region, fortifying the border with concrete forts, gun-emplacements and pill-boxes similar to the French chain of defenses against Germany, assembling submarines in Vladivostok, laying out aviation fields by the score, creating a huge air-force to support this immense army, while instigating revolt and supplying arms to the discontented in every region of Asia where there exists a sign of unrest. The Chinese armies of Ma Chung-shan and Su Ping-wen which took refuge in Soviet territory have been trained by Soviet officials, their leaders schooled in Moscow and sent to Hsinking. They are there now, fighting for their protectors.

Stalin, Molotov and all the High Commissars, the Aristocrats of Communism, are telling the world what they intend to do. The leopard cannot change his spots or the Slav his methods. The same old process of expansion goes steadily forward while the rest of the world is deluded by brazen propaganda into believing how peaceful and dove-like is Russia, how she has thrown overboard her Revolutionary program and that it will not be long before she emerges as a great liberal state, the protagonist of world peace and brotherly love. But the Slav has not changed in a generation. To-day, as yesterday, the nation that accepts Russia's protestations of peaceful intent and disarms, has only to turn back the pages of history to be convinced of the fate which awaits it. Despite the fact that Britain has advanced a forty million pound credit to Moscow to enable it to close the wall around Hitler, she is on her toes, wide awake, in Central Asia. She takes her own precautions and the world applauds or says nothing. But let Japan make a similar move to protect herself and a roar of invective fills the world press and the machinery of the Great Powers is set in motion to hold her firmly in the treaty trap they set for her at Washington, while the chartered libertine at Moscow perfects preparations for her undoing. Is it any wonder that the Japanese army chiefs are somewhat apprehensive, irritated, jittery, if you will, and are now firmly insisting on a policy of watchfulness and full preparedness?

Forcing Japan's Hand

The League verdict and suspended sentence; the repeated warnings emanating from Geneva that when Italy is disciplined, it will turn on Japan; America's refusal to recognize Japan's right to self-preservation or accept any change in the status of that undefined geographical area known as "China"; President Roosevelt's sudden reversal of Sound American policies and principles in recognizing Soviet Russia and the explanation subsequently disclosed that it was to hold Japan in check; American advice to Nanking not to commit itself with Japan by recognizing Manchoukuo; the constant flow of bombing planes and war material into China for the armies of Chiang Kai-shek; the implications of the American cotton and wheat loan to strengthen China against Japan; America's determined attitude in holding Japan in an inferior naval position; the building of a fleet of huge bombers capable of a non-stop flight across the Pacific; the unusual activities in laying out new air routes all over the vast Pacific area: air bases in the Aleutians, in Alaska and the Pacific Coast; the conversion of Hawaii into the Gibraltar of the Pacific; the new Dutch aerial and naval program for the defense of Insulinde, dovetailing with similar activities on the part of the British and French, all working towards making Hongkong and Macao the aerial hub of the Orient; the huge British and French loans to Moscow; the bellicose utterances that for the past few months have emanated from the highest Soviet officials, and other highly significant and alarming international trends at the precise time when the Chinese Reds have contacted with their Soviet Masters in Mongolia and Hsinking and invaded the provinces adjoining Manchoukuo, where they threaten to repeat the horrors which marked their progress in South China, has compelled the Japanese army to adopt the same measures of defense

that Great Britain has found most useful and legitimate in protecting her Indian Empire.

The Law of the Buffer State

An essential feature of Japan's defensive program has been the setting up of independent and semi-independent or autonomous states to serve as buffers against what the late Viscount Chinda in 1921 termed "the menace from the direction of Urga," following the precedent set by Great Britain to safeguard India against the same danger. Even Russia has resorted, to similar tactics in prosecuting her wars of conquest and annexation of the Caucasus and then the Central Asian states, the Altai, the Amursk, Primorsk, Saghalien, Manchuria, Mongolia and Chinese Turkestan. The technique has never varied. "No quarter was given, no pity, no cessation to the slaughter until the people grovelled and begged for mercy." When the old men and fighting males were eliminated, the Cossacks settled down to enjoy their conquest and repopulate the country with the surviving females. Exactly the same as over the centuries the Huns, the Mongols, the Manchus and other barbarian hordes from the bleak Northern steppes swept down over the great wall, laid waste and conquered China, filled their yamens with concubines and in two or three generations were sapped of their strength and absorbed into the race of Han.

Wholesale Massacre

Some idea of the deep-rooted Russian hostility towards the peoples of Asia which assuredly did not disappear overnight with a change in the system of government, is seen in the following extract from a Communist propaganda work entitled "The Bolsheviks Discover Siberia."

Markov, a deputy of the Kursk nobles, once said in the tsarist Duma as he pointed towards Asiatic Russia: "We must remember, gentlemen, that the Khirgizians live there. They are the filthy descendants of Tamerlane and Genghis Khan. They should be treated as Indians were treated in America."

It is well known how the Red Indians were treated. In the course of a few decades there were very few Indians left in the United States. Markov sought the same treatment for the inhabitants of Asiatic Russia and Siberia. The tsarist generals and officials knew, without the advice of Markov, what was to be done with the natives who inhabited the borderlands of the tsarist empire. Kaufman, the governor-general of Turkestan, gave the following order to his forces: "I command the complete and absolute annihilation of the nomad Turkomans."

General Perovsky wrote the tsar: "If we save Samarkand for ourselves, we could leave Bokhara without bread and water, thus dooming it to famine and thirst. And that, your Majesty, would allow us to regulate the passions of the fanatic population by means of a salutary diet."

The tsarist government did not consider the minor people living on the borders of the empire as human. These borderlands were made a part of Russia by armed force, by conquest. The government considered that it was necessary to stifle and destroy the nationalities living in these tsarist colonies...

As will be seen further on, this policy of annihilation, suppression and subjugation has a special reference to Mongolia and the Mongolian races. The record of the Soviet in Central Asia, in China and at home would seem to confirm the belief that the old tsarist system of treating subject peoples has been very faithfully adhered to by their successors in government.

Britain's Wall Against Russia

It is unnecessary to review step by step the gradual erection of a cordon of semi-independent states guarding the approaches to India against an invasion from the North or to describe how slice by slice China's territory has been made to serve the purpose of British Imperialism. Nepal, Bhutan, Tibet, Burma, Assam, the Yangtze Valley, Kashagaria, all parts of the old Chinese Empire, are now links in Britain's defensive system against the menace that looms over the treasure house of India from the Roof of the World. Add to these, Baluchistan, Irak, the Persian Gulf, Southern

Persia, Arabia, Egypt, Palestine, Trans-Jordania and a fluctuating influence in Kabul and Teheran and the wall against Russia is complete. Had not a hard-boiled American General reported adversely on the Mandate for Armenia which Great Britain in a moment of great generosity was anxious for the kind Americans to take over at Paris, an American army by now would be serving as an additional guarantee that India's security would never be endangered by the Russian's breaking through the cordon at that point. By hook, crook, or otherwise, Great Britain has so firmly established the policy of creating these semi-independent buffer zones that the process has become a fundamental and legitimate auxiliary to her imperialistic system, tacitly recognized by international law. As she never knows where hell will break out next, or when or where it may become necessary to extend this defensive principle, she very cautiously reserved in the Peace Pact the right of self-defense in certain undefined regions, thus leaving the door open to define for herself the time and place to go to war in self-defense. When it becomes necessary to place Afghanistan, Kashgaria or the regions on the other side of the north-east frontiers of India under British protection or tutelage, it will be done strictly according to precedents established by herself and recognized by all other Powers as legitimate.

Closing the Wall Around India

If the world is seeking an explanation of the negotiations now reported to be progressing at Nanking for a British loan to extend the Yangtze Valley railway system to Chengtu in Szechuen, it will be found in the desire of Great Britain to consolidate her influence in and erect another formidable buffer on the north-east frontiers of India against the threatened invasion and conquest of Western China presaged by the Soviet dominance of Hsinking. The pages of history have been turned back twenty-five years. Once again, France and Russia are in open alliance (with God only knows what secret clauses and commitments). French money is flowing into Russia in the shape of loans and credits which may or may not be used exclusively to bolster up the Slav end of the wall around Germany. Britain dares entertain no illusions. Thirty years ago every advance made by Russia in the North was followed by a corresponding move by France in the South, the latter fighting Britain step by step for the control of Yunnan and Szechuen, until finally through railway concessions, French influence dominated Western China, with the added right to build the last section of the line from Hankow to Chengtu. The Belgian Ta-Cheng concession completed the Far-western north and south trunk line linking the French with their Russian Allies on the North. Chengtu had become their center of influence. Into this fight for Empire the Americans intruded to uphold the principle of the Open Door and finally obtained in the Hukwang Agreement the right to build part of the line into Szechuen. The Siems-Carey Company subsequently was generously conceded by Peking a similar right to build a line into Szechuen and actually surveyed it, but the British finally protested, claimed prior rights and it had to be dropped.

Now that the Consortium is dead, the British are returning to their fundamental policy for the protection of India. The United States may fret and fume, endeavor to revive interest in some new program of international co-operation, but in the meanwhile, time passes, and the menace steadily draws nearer. Anything may happen in Europe to turn France into an active partner of Russia in Asia and, once more from her vantage point in Indo-China, her grip on Yunnan and her rights in Kweichow, Kwangsi and Szechuen, can make it very uncomfortable for a Britain disposed to be too friendly with Germany. A situation is rapidly developing, where Great Britain dares take no chances. Should the reported railway negotiations reach the point where actual construction is proceeded with, the British will have finally completed the protective wall around India against Russia, by establishing firmly their dominance in Szechuen.

The Slippery Russian Way

As for Russia, it is only necessary to glance at the map of Central Asia and follow the process of how, one after the other, the Turcoman states have been invaded, crushed and annexed into the Russian system. Trans-Caspia, Amu-Daria, Syr-Daria, Khiva, Akhal-Tepe, Bokhara, Samarkand, Khokand, Ferghana, the Pamirs, Semiretchensk and the Ili region of China, (subsequently

restored), were conquered and absorbed within the space of twenty-five years. Then came the final thrust towards the goal of Empire with a Russian railway terminating at the Afghan border with a few hundred miles of rails, sleepers and rolling stock assembled at Kushk for pushing it at a moment's notice through to Herat. Russian exploring parties were scouting all over Tibet seeking other passes through the Himalayan Wall into India. Checked finally by Britain, Russia, true to the law of her history, transferred her activities to the Far East, rushing through the Trans-Siberian Railway, allying herself secretly with China against Japan in order to obtain the Manchurian cut-off to Vladivostok and the warm-water outlet and naval base at Liaotung. Once firmly established in this new vantage point, she broke faith with her Ally, brazenly created Manchuria into a viceroyalty, closed it to foreign trade, travel and residence and intensified her drive towards India through the territory of China, forcing Great Britain to erect another barrier against her advance by creating the Yangtze Valley into a British sphere of influence, extract from China the Kowloon Lease for the defense of Hongkong and the lease to Weihaiwei to enable her navy to keep a watchful eye on what Russia was doing in Port Arthur. But nothing could stop Russia. Aided by her French Ally and Belgian financial agent, Russia's plans went steadily forward until by 1914, China was split north and south and east and west by a system of through trunk railways or concessions for their construction, facilitating her approach to the north-east frontiers of India. In addition, she secured another warm-water outlet for her projected Central Asia trunk line at Tungchow on the Yangtze opposite Shanghai where, screened behind its Belgian puppet, the Bear sat thumbing his nose at the discomfited and growling Lion on the opposite bank. The Lion let out a few roars up Peking way and the terminus of the great Lung-Tsung-U-Hai line was transferred to Haichow, a wind swept junk-port on the Kiangsu coast just outside the northern limits of the Yangtze Valley. The story of Russia's advance in the Far East from the time Muraviev stole the Altai and Amur regions from China in 1858 and the Primorsk in 1860, is one long repulsive narration of chicanery, broken pledges, bribery, perjury, secret treaties and slippery diplomacy, a record upon which the nation must be judged.

Hay Fixes the Status of Manchuria

It is well to pause here and ponder over what Mr. Young says in his book about American interest in Manchuria.

"In Manchuria we have had a special interest. It was through our initiative that this region became recognized as a real part of China. We stretched a point in making it so. In reality it was not an integral portion of the great Flowery Kingdom. One solid and inescapable fact proves that: the Chinese built the Great Wall to keep Manchuria's people out of their domain. A connection was made when the Manchurians conquered China, but they were always regarded as usurpers and aliens. The tie was formed because the Manchurian dynasty took the land of their fathers into the Imperial structure: but even this dynasty cared little about the northeastern provinces and virtually sold them to Russia when it gave that Empire the right to build the railroad to Port Arthur and bring in troops ostensibly to safeguard the line."

Mr. Young has been reading Manchoukuo "propaganda." At least, he is the first American writer who has had the courage to state the truth and support it by historical facts. He will probably get *The New York Times* in Dutch with the State Department and lose his job for complicating the situation. Others have been severely disciplined and penalized for such rank heresy. Let us read the next paragraph in his book:

"America became interested in the region after our troops joined in the Allied expedition that put down the Boxer rebellion. We were deeply worried when Russia, taking advantage of that crisis moved strong forces into Manchuria and intrigued in Korea and across the Great Wall in the direction of Peking: a worry in which Britain and Japan shared. Out of this concern came the dictum from Secretary of State Hay that Manchuria was an integral part of China and must so remain. Britain and Japan, glad to have our aid against their common foe, joined in what was really an historical fiction. America became tightly tied to it, with results we have seen in recent years."

Wham! Such a bold and challenging statement coming from an editor of *The New York Times* places Mr. Young automatically as No. 11 on the list of China's Public Enemies, while in Washington he will go on the black-list as a paid Japanese propagandist. It is, however, refreshing to find one American with the courage to face and state the facts. The Gods of Geneva, Lord Lytton, Mr. Stimson and others who make and interpret international law, insist that Manchuria indisputably is an integral part of China and refuse to recognize the right of the Manchus to sovereignty in their own Homeland. They surrendered that we are told, when a few million Chinese laborers entered the country illegally and took up lands as tenants of the Bannermen landowners. Just as though sovereignty of the Hawaiian Islands had passed to the Japanese who were brought in under similar contracts to work the land for the American sugar-barons, and in time outnumbered the Hawaiians and Americans. But Mr. Young is right. America butted in to an Asiatic problem it knew nothing about, proclaiming that Manchuria belonged to China at the precise moment when the Empress Dowager kept concealed in a safe in her private sleeping apartments within the walls of the Forbidden Palace, her copy of the secret treaty of alliance Grand Secretary Li Hung-chang had signed with his nice Muscovite friends in exchange for a few million taels and which handed over Manchuria to Russia to build military railways, get ready to annex Korea and subjugate those upstart islanders in Nippon who were causing Li so much trouble and loss of face. John Hay was ignorant of the existence of that secret treaty when he laid down the dictum that Manchuria was a part of China, but the present Administration is better informed. It knows exactly how Hay was duped, how the text of the treaty was mutilated before being filed at the Washington Conference, but it still adheres to the fiction and, as Mr. Young states in the opening lines of his book, is preparing to uphold its policies, fiction or no fiction. Such is diplomacy. Out of such fool breaks, wars are made. The American people may yet be sent to the slaughter to uphold the fiction that John Hay imposed on the nation as its cardinal policy.

Russia's "Monroe Doctrine"

Let us now return to the nation whose secret treaties, double-dealing and brazen disregard for the truth, led John Hay into making such a diplomatic blunder.

We are now told that all this is a thing of the past. Russia has repented and reformed. She is now the soul of honor, most scrupulous in her respect for treaties and her pledged word. Never again will she seek to impose her rule over defenseless peoples. Yet this new Soviet power which emerges from its blood-bath clothed in garments of snow-white political purity and protests its innocence of an evil intent, started its career by repudiating its treaties, debts and obligations to other nations, and is now following the same tactics as its Czarist predecessors. The new principles laid down by the Revolution are merely the window-dressing to hold the attention of a gullible world. Behind this glittering false front, the same old game goes steadily forward.

Russian aims and methods are neither new, disguised, difficult of comprehension, nor liable to change. They follow in an infallible sequence that any intelligent high school student can understand. The new principle in Russia's policy was aimed at using Asia as a lever for overthrowing European capitalism, and it was not long before advantage was taken of the chronic unrest and absence of responsible government in China to incite its 500,000,000 people to cut each other's throats. After eight long years of blood-letting, they are still at it and from all appearances the Great Christian Powers will not lift a hand to put a stop to the carnage that is converting China into a vast charnel house.

But this is only a side issue to the main subject of building up buffer states. I can now recount from my own experience a story that will help to explain the basic Russian policy in regard to Mongolia. In December 1916, while passing through Petrograd en route to London, I had an interview with the Russian Minister of Foreign Affairs and his two chief secretaries on the subject of the Russian protest against the contract for the construction of the Inner Mongolian railway from Suiyuan to Ninghsia that the Chinese Government had signed with the Siems-Carey Company of St. Paul. The gist of his remarks was as follows:

"The United States has a basic defense program embraced in the Monroe Doctrine. You Americans will go to war immediately should this doctrine be infringed. Well, Russia

also has its basic defense doctrine that it will go to war at a moment's notice to uphold. It is based on preserving Mongolia as a buffer state, free from Chinese penetration and colonization that in time will bring these 400,000,000 prolific people pushing against our borders. We have enacted no exclusion laws such as you have in America to keep the Chinese out, but we have our own methods of dealing with them when they seep through the barriers. We do not want, nor will we permit, this menace to grow. For this reason, Russia cannot consent to the construction of any railway whether with Chinese or foreign capital that will open up Mongolia to Chinese colonization and menace our frontiers. Russia will fight to uphold that doctrine."

Stolypin did not have to explain the Russian method of handling the problem of Chinese penetration into Siberia. They once drove at the point of the bayonet a few thousand into the Amur River at Blagoveschensk in the middle of winter and watched the poor wretches drown. In other places they simply shot them down or sabred them. No, Russia did not enact Asiatic exclusion laws. The above remarkably frank statement of the Russian Foreign Minister was subsequently confirmed in more diplomatic language in the 1916 volume of U.S. Foreign Relations (page 199) where will be found the Russian note of protest to the American Minister at Peking, in which it was stated that Russia could not consent to the construction of any railway which would open Mongolia to Chinese penetration and colonization and, that this territory had to remain as a buffer state.

Russia Works Behind Closed Doors

It is highly important at this time that this basic Russian policy be emphasized, as in it, is the explanation of much that is now but imperfectly understood and which the Soviet is not anxious to broadcast for fear of the effect on its dupes in China. Soviet Russia is adhering faithfully to traditional tactics and fixed policies. As Czarist Russia hermetically closed the Turkoman states of Central Asia to mask its advance on India and afterwards sealed Manchuria against the prying eyes of foreigners to hide its preparations for the rape of Korea and war with Japan, so its successors in power have closed Mongolia and erected signboards at its entrances warning all and sundry to keep out and stay out. Bokhara, Khiva, Manchuria, Mongolia, tell the same story. From within the hidden confines of Mongolia looms the "menace from the direction of Urga" that for many years has worried the Japanese in South Manchuria, the compelling reason why Japan so stubbornly held out before signing the Consortium Agreement in 1921, and why she then refused to pool the Taonan-Jehol line which she deemed essential for the defense of Manchuria and China itself against the menace concealed within a forbidden territory under the dominance of Russia.

The same preparations that were carried out within the closed states of Turkestan and in Manchuria, are being duplicated in Mongolia. All travelers who seek to penetrate beyond its borders are considered spies, and are dealt with as such. The experiences of those few who have been fortunate to emerge alive from this prohibited region recalls the adventures of Burnaby at Khiva, of O'Donovan at Merv or McGahan on the Oxus, those intrepid British and American journalists who took their lives in their hands to ascertain the truth about Russia's wars of extermination against the Turkomans and the progress of their advance towards India. When, to-day, the government of the independent republic of Mongolia rejects all friendly overtures from its neighbor, Manchoukuo, for the exchange of diplomatic agents to reside in the respective capitals of both countries, it is not because the Mongols have anything to conceal, but that their Soviet overlords will not tolerate the infringement of a basic national policy which might lead to the opening of this region to foreign trade, travel and residence. Any treaty between Mongolia and Manchoukuo followed by mutual recognition, exchange of diplomats and free intercourse, would be the precursor to full rights of travel and residence which automatically would open the country to Chinese and Japanese penetration. In a few years, such a treaty would completely nullify the basic Russian doctrine of preserving this region as a buffer between the two races.

Behind the Mongol Screen

To this basic Muscovite doctrine is now added vital Soviet strategic considerations which for the moment are paramount

Obviously, there is nothing within Mongolia that any nation might covet, except the acquisition of additional territory for the pure lust of empire. Two million nomads living in yourts under primitive tribal conditions, a few million horses, sheep and camels, no agriculture to speak of, dirty lamas, Living Gods and unspeakable filth, complete the picture. There are some valuable mineral deposits but the Soviet will not permit them to be worked. The trade of the country is nominal, not worth fighting for. It might serve as an outlet for China's surplus population but the Japanese who refuse to go even to Manchoukuo as settlers, are not likely to swarm into the more inhospitable region to the west. Mongolia's chief value at this moment is purely strategic, a forbidden zone within whose confines its Soviet overlords can prepare in their traditional Muscovite way for further conquests and wars of revenge. It is well not to lose sight of this last phase of the Asiatic situation. I quote from Prince Lobanov-Rostovsky's recent book, "Russia and Asia":

"... it is interesting to note that one of the rules of Russian strategy in warfare against Asiatic peoples consisted in never letting a defeat remain unavenged. Over and over again we shall see this policy carried out in various parts of Asia, and it undoubtedly accounts for a large part of the success of Russian expansion in Asia. This policy was based on the correct understanding of Asiatic psychology, and it was this that accounted for the tremendous prestige the "White Czar" enjoyed in Asia in the 19th century. Conversely, when crumbling Czarism found it impossible to enforce this rule in its struggle against Japan in 1904-1905, it suffered a loss of prestige which proved fatal."

It will be noted that the Russian estimate of Asiatic psychology is precisely the same as that expounded by Colonel Bruce. If you treat them kindly, they will despise you for your weakness. The present generation is prone to overlook that Russia never forgave Japan for her defeat and humiliation in 1905, just as she was all prepared to cash in on her expensive preparations for the annexation of North China and the acquisition of further rights that would have opened a road through China to her goal in India. Again, it seems superfluous to review in detail the strenuous Russian activities that followed the Peace of Portsmouth to prepare for the war of revenge against Japan which Count Witte admitted was scheduled to take place in 1912. Only the events in Europe leading up to 1914 and the World War, Russia's collapse and the enforced necessity of taking time to recuperate, has delayed the Muscovite in seeking his revenge.

With this as a background, we can further consider the situation in Outer Mongolia where a Mongol army has been created under the direct control of Moscow's military representatives, that an arsenal at Ulanbator is operated by Soviet Russians, that the military and civil aerodromes, landing fields and petrol supply bases are all under Soviet army control, that all the main fortifications along the frontiers are garrisoned by Red troops, that the commander of the combined Mongol forces of about 75,000 is one Ivanoff while the so-called militia is led by Dalgheim, another Red from Moscow. Besides posting Russian troops at strategic centers, there are also several Red regiments for special duty with the native garrisons. At the first sign of insubordination or discontent on the part of the Mongols, they are taken out and shot. Moscow's military domination of Outer Mongolia is complete. The spirit of the natives has been crushed in the time honored Muscovite way of treating subject Asiatic peoples. The Mongols are so completely subdued as to make any claim to independence a farce.

This is the picture that confronts Japan in Outer Mongolia and when Stalin tells Mr. Roy Howard of the United Press for world broadcast, that Russia will go to war in defense of the independence of Mongolia, he means that he will fight to defend the fixed and unbending Russian doctrine to preserve this territory as a buffer state, behind which he can carry forward preparations for flanking Japan in South Manchuria and continue to supply the Reds in China with arms and munitions carried across the Gobi in motor trucks or camels. His grandiloquent phrases about world peace, the mission of the Socialist state, abhorrence of World Revolution, concern for the sacred independence of Mongolia, the strength of the Soviet Union and the righteousness of its cause, in the language of that East Side diplomacy that Mr. Finkelstein, Bronstein and other old constituents of "Al" Smith now directing

the affairs of Soviet Russia, will recognize as, Boloney. And no matter how thin you slice at, it is still—BOLONEY!

III.—The Creed of Lenin

As Raymond Clapper puts it in a recent issue of the *Saturday Evening Post*:

"The whole Communist gesture is suggestive of that scene in the Nibelungen cycle where Siegfried is told of the intention to make way with him while at the same time he is being overwhelmed with friendly and flattering speeches. Taken together, the three Soviet organizations—the sovereign body of world Communism—make no secret of their intention to destroy our Government after embracing us with a petty increase in trade. . . . How to go about this boring-from-within technique is contained in a creed handed down from Lenin; 'We must be able . . . to be ready for any sacrifice, and even if necessary, to practice trickery, to employ cunning, and to resort to illegal methods, to sometimes even overlook or conceal the truth—all for the sake of penetrating into the trade-unions, to . . . carry on the work of Communism.'"

When we recall how over the centuries these past-masters in the gentle art of deception have successfully made monkeys of the most astute statesmen of Europe, masking their designs behind secret treaties and diplomacy and concealing their military preparations for further conquest by hermetically sealing whole states against foreign penetration, it is quite apparent that the Lenin creed is merely the extension of traditional Slavic principles under which the czars of Muscovy so firmly established and expanded their empire. Human nature does not change in a generation.

Gullible Americans, unversed in the ways of Eastern diplomacy may be taken in by the Kremlin, but no Asiatic people can be fooled by high and lofty phrases broadcasted from the palace and home of an overlord whose generals in the field operated under orders to exterminate them. The Soviet's flagrant violation of its prerecognition pledges to discontinue its subversive activities in the United States should be sufficient to warn Americans of the fate in store for them. When the State Department protested against this breaking of the recognition agreement, Moscow replied that "the Soviet Government cannot take upon itself, and never has taken upon itself, obligations of any kind with regard to the Comintern," a flat repudiation of the pledge that it would not permit the formation or location on Russian soil of any organization or group and would prevent the activity of any organization or group in Russia which has as its aim the overthrow of or the bringing about by force of a change in the political or social order of the whole or any part of the United States.

A preview of what the world may expect from a State which repudiated its own treaties and debts and which, because of the strategic situation in Europe has been accepted as a member of society in good standing, is presented in the following blast from the *Red Star*, organ of the Soviet Army, on the occasion of Hitler's reoccupation of the Rhineland. *Invasion of the Rhine by Germany is a new symbol of aggression. Taken together with the repudiation of the Locarno Pact it cannot be justified for its unparalleled insolence.* How short is the Muscovite memory! Coming from the organ of the Red Army, the main support of a State which, when its own interests became paramount, violated its pledges to its Allies and made a separate peace with Germany, which has since regained its military strength and resumed all its old-time arrogance by repudiating its debts, dishonoring its contracts and confiscating all foreign wealth and property, while violating every recognition agreement other nations have signed with it for commercial reasons, reveals a psychology that tells us what to expect should the keeping of the Scales and Sword of Justice be entrusted to a Nation that so soon forgets its own lapses from rectitude.

Honeycombed with Communist cells, sapping the very foundations of their institutions, the American people or their Government have placed no check on the activities of the Red agents of Moscow. We grant them special privileges, provide halls and forums from which to disseminate their revolutionary doctrines, we lionize them in high society, our newspapers fill their columns with glowing accounts of their doings and sayings, we permit them to publish their subversive newspapers in all languages, we admit shipments of their school books and propaganda literature, and

consent to steamer-loads of school teachers visiting Russia under specially conducted Red Tourist Guides. We are so sure of ourselves that we do nothing to counteract or defend our institutions against activities that are sowing the seeds of hatred and paving the way towards a repetition of the horrors of Red Revolution. However, that is our own affair. We are like China, and like China, will some day awaken to the realities when it is too late. We will then pay the same price for our stupidity.

The Four Horses of Muscovy

Japan, neighbor of Russia and of China, entertains no illusions. The Japanese, an Asiatic race, understand the psychology of the Russians and Chinese. They know intuitively what to expect. Japan has already paid the price for her too credulous dependence on Muscovite and Chinese promises. She has watched with apprehension the slow, sure, ponderous forward movement of the Russian road-roller smashing everything before it as it cleared its way across the *taigas* of Siberia towards the shores of the Pacific and laid claim by right of "discovery" to lands and empires that from time immemorial have been the home of other more civilized, more cultured and more advanced races.

From the 'fifties of the last century, coincident with Japan's enforced emergence from her voluntary seclusion, she has seen Russia absorb piece by piece, the domains of China. The Altai slopes, the Amursk, the Primorsk, the Pacific Littoral, Saghalien, Manchuria, Mongolia and now Hsinking. At every step she has seen her weak and venal neighbor surrender to the demands of the Moscovite without making a move to defend her sovereignty and territorial integrity, while every transfer of territory brought the menace one step nearer to her own shores. She has seen China enter into a secret alliance with Russia, handing over Manchuria so that the Muscovite could more readily annex Korea, close it to foreign observation and prepare for the next advance across the Straits of Tsushima. She has watched while New Russia entered into another secret alliance with Canton to establish the Kuomintang-Soviet rule over all the country. She has seen the defenseless peoples of whole cities, towns and villages mercilessly butchered in the time-honored Muscovite fashion, provinces devastated and the country converted into a shambles. She still views with deep sympathy the suffering of the peoples of China as the Four Horses of the Apocalypse lashed by the whips of Muscovy, ride rough-shod over their helpless victims. The Japanese sense what is in store for them. They are merely another Asiatic race living on the borders of Holy Russia, outside the pale, to be conquered and converted into another Muscovite colony.

When we turn back the pages of history and read about the naval activities of the Japanese from 1281 when they defeated the combined Mongol and Chinese fleets, to 1542, the year that Europe "discovered" Cipango, and then keep in mind that from 1400 to 1636, the Sea-Rovers of Satsuma dominated the Eastern Seas from Kamchatka to Java, the claims of Russian and other Western nations to Eastern Asiatic lands by "right of discovery" is ridiculous. That they have any basis in international law at all, is due to the fact that Iyeyasu Tokugawa closed Japan to foreign intercourse and called home the Drakes and Hawkinses of Nihon, were they remained until 1854. When the Muscovite "discovered" Kamchatka, the Kuriles and Saghalien, occupied the Amursk, the Primorsk and then entered Manchuria to take Korea preliminary to subjugating Japan, it requires considerable moral courage to accuse Japan at this late date of aggressiveness because, since her entrance into the life of the modern world, she has declined to accept the law of the West which recognizes the Muscovite right to impose his rule over the "non-humans" of Eastern Asia. Had Japan not heroically staked her existence in 1895 and again in 1904-05, to avert this disaster, China would long since have passed under the rule of Muscovy and the streets of Tokyo would now be patrolled by Cossacks. Once more she saw the Muscovite closing in, and defended herself while she yet had time to do so. She reversed the established rules of the game legalized by international law for the express benefit of Great Britain and Muscovy, and has set up her own buffer states. We now accuse her of breaking the law of the treaties, but behind the treaties remains the basic law of self-preservation, the supreme law of the universe.

The Japanese take their own precautions against the spread of subversive doctrines and teachings. They admit into their country no one with the taint of Communism. They censure all

books and newspapers. They are ever watchful and alert, determined to preserve the institutions that have carried them through twenty-six centuries, unified them as a race and bound them together as a nation. They have an exact knowledge of what Russia did in 1900, when it annexed and closed Manchuria. They had to fight for their life to escape being converted into another Russian satrapy. They do not have to be told what is transpiring within the hidden confines of Mongolia and they interpret correctly the moves in North China and all along the Soviet-Mongolia-Manchoukuo border. The Japanese Army now stands foursquare before the world and proclaims that this has gone far enough. It can stand it no longer. If the people of the United States are so ignorant of Muscovite psychology as to delude themselves about the future, the people of Japan, another group of Asiatics, understand the realities of the picture that is now splashed across the canvas of Asia in blood Red colors.

The Outlaw Turned Sheriff

To all proposals advanced by Japan to bring about a diplomatic settlement of outstanding disputes, such as the demarcation of the Manchoukuo-Siberian-Mongolian boundaries, setting-up a demilitarized zone, establishment of relations between Hsinking and Ulanbator and other problems, Moscow invariably answers that nothing can be done until a non-aggression pact is first entered into, citing the pacts she has signed with her European, Turkish and Persian neighbors, as evidences of good-faith. Because Japan has declined to accept this lead, Soviet propaganda, reinforced by League, internationalist, pacifist, socialist and liberal publicity, interprets her attitude as proof of insincerity and aggressive designs. As Japan stands convicted by the League and the United States of premeditated aggression in Manchuria and of having embarked on a career of conquest, with world opinion marshalled against her, she is again placed on the defensive, with no court in existence before which she can present or appeal her case. Nihon with her army of 230,000, is the ogre, the menace to peace, while the "Giant of the North" with an army of 1,300,000, of which 300,000 or more are strung along the Manchoukuo borders, is the Champion of the Law, the Outlaw turned Sheriff, heading the posse to execute the unpronounced sentence of the League on the smaller Nation which, in defending itself against the former desperado, defied its Mandate.

The League, now dependent for its precarious existence on the guns of the outlaw, who for sixteen years, defied, denounced and villified it as a pack of robbers, has pardoned and elevated him to a seat on its inner councils. If a man is judged by the company he keeps, so are Nations. We did not elevate Russia when she was pardoned and readmitted to Society. We merely sank to her level. Russia is now one of the select, a judge of the Supreme World Court, while Japan is outside the law. It puts us in mind of old Western tales of bandits and swaggering two-gun bullies pardoned by the law and hired as killers to execute the sentence of the court on a falsely condemned prisoner who, escaping from custody, defied the authorities and took to the hills determined to sell his life dearly. To this "outlaw" who defended himself against the Chartered Libertine of Asia, the latter, now pardoned and heading the posse, says in effect; "you must sign a truce and lay down your guns before we can parley over those matters which provoked you to break the Law of the League, and which I am now commissioned to enforce."

Timeo Danaos Et Dona Ferentes

It rings true and is applauded by the League and the United States, the judges who pardoned and recognized the old outlaw to be revenged upon Japan. World opinion is with Russia. But Nihon has a very vivid recollection of the past record and methods of this "G"-Man of the League who hails from Muscovy. The minds of the Japanese wander back over eighty years and recall incident after incident of how the Muscovite has broken his pledged word. They retrace the steps which carried him steadily towards the Pacific under cover of secret diplomacy, how he ruthlessly massacred whole tribes of "non-human" Asiatics and prepared his further campaigns of aggression from within the confines of hermetically sealed conquered territories. They keep in view the Li-Lobanoff secret treaty of alliance and the closing of Manchuria to mask the preparations that went forward for their subjugation.

They recall Russia's violated pledge to the Allies in 1918, which released the German armies for service on the Western Front, and the dishonoring of all treaties, repudiation of debts and obligations that followed. They see in all parts of the world how Moscow's pre-recognition pledges are being insolently broken. They are fighting tooth and nail to keep their own institutions from being undermined. They have a very accurate knowledge of the secret arrangement between Canton and Moscow in 1925, while before their eyes is the picture of a China which trusted implicitly in Moscow's good-faith. They know all about the tremendous war preparations being feverishly pushed to completion in Eastern Siberia. They do not have to be told what is behind the First and Second Five Year Plans and the centralization of Soviet power east of the Urals. They are well informed of what is transpiring in those lands of mystery, Hsinking and Outer Mongolia and have further inside information on what goes on behind the screen in European Russia.

Always before them is the threat of an army of 300,000 led by a general who directed the Kuomintang-Soviet conquest of China in 1927, smarting under the humiliation of being kicked out by Chiang Kai-shek at the very moment of victory and awaiting patiently the hour to retrieve his lost opportunity. They are witnessing from day to day the mounting proofs of his unfriendly, high-handed activities in provoking border incidents, inciting unrest and arming and encouraging bandits to make raids into Manchoukuo. They see Red garrisons strung along the borders of Outer Mongolia, directing and supporting their Mongol dupes in raiding the lands of their brothers who have accepted the rule of their old Emperor, Kang-teh.

The Japanese see all these things and sense instinctively how much faith and trust can be placed in any truce masked by the terms of a non-aggression pact, which does not differ in essence from the Peace Pacts, a truce that would concede to Moscow all the time necessary to complete the plans now being pushed forward to enable it to consolidate its hold over territories stolen from China during the last eight decades and to use them as hidden and prohibited bases from which to regain their lost ascendancy in Manchuria and China Proper. They believe, and rightly, in the opinion of this observer, that the new Communist Empire centered on Siberia will never develop with only one ice-bound outlet for the commerce of that vast region. The billions of roubles now being expended to transform Asiatic Russia into a vast iron and steel foundry, industrial workshop, chemical laboratory and granary, linked together with thousands of miles of trunk railways and feeders, will bring no permanent returns on the investment without an ice-free port, which cannot be found within its own territory. Vladivostok is dead and decaying. No paying traffic passes through it since the new Manchoukuo lines have diverted the cereal shipments of that region (formerly served by the Chinese Eastern), to their natural outlet at Dairen. All Japanese firms have been ordered to close and depart.

It is now merely another hermetically sealed military area concealing vast aviation fields and submarine construction. The picture viewed from a strategic standpoint carries its own story. To state the case, is to suggest the answer.

With the record of Russia ever before them and a more intimate understanding of the working of the Slav mind, the Japanese are on their guard against the Muscovite bearing gifts; *timeo Danaos et dona ferentes*. Japan would be unwise indeed should she sign the "Truce of the Bear" implied in a non-aggression pact and again stake her existence on the word of honor of a nation which has so flagrantly repudiated its pledges in the past. This is the reason why Japan insists that the various questions outstanding between the two nations be settled one by one and peace assured by a mutual withdrawal of armies from the danger zones and the demarcation of a demilitarized zone on either side of the Manchoukuo-Soviet-border.

Soviet Russia may have reformed. She may be sincere. It is quite possible that she is, but in view of the record and of what is before their eyes, the Japanese would invite the consequences should they relax their vigilance and stake their future on any arrangement which does not include a safety zone that would give them time to mobilize should Russia revert to established tactics. And one test of Russia's honorable intentions would be the opening of Mongolia to foreign trade, travel and residence. As long as this hermetically-sealed buffer state masks the preparations for another advance in the best traditional Muscovite manner, Japan will continue to be apprehensive and on her guard.

IV.—The Real Issue

So we return to the function of the buffer state. It is superfluous for this commentator to again review the events leading up to the establishment of the independent state of Manchoukuo. Ignoring all other phases of the controversy as to the legitimacy of that state and the right of its people to self-rule, the outstanding fact remains that Japan did not invade, conquer or annex this territory. She is pledged to respect, maintain and defend its independence and sovereignty, exactly as other buffer states carved out of China have been erected into semi-independent entities for the defense of India and recognized as such by other Governments. Russia has followed the same methods in her relentless march towards her goals in Asia.

In view of her past experience with these moves of Russia and in the light of what is actually transpiring in Asia, the question arises, has Japan the right to resort to the same tactics to defend herself by setting up independent, semi-independent or autonomous states within the confines of another vast undefined geographical area? The weakness, inefficiency, venality and indifference of its various so-called governments, has resulted in the annexation of huge portions of its territory into the Russian system and compelled Japan on two occasions to fight for her own existence? Where must the line be drawn?

The issue confronting us is not the Open Door, the Nine Power Treaty or the Peace Pacts, but whether or not the law of self-preservation is to be extended to Japan, whether she is to remain bound by treaties which hold her fast in a trap, while Soviet Russia carries forward her program of conquest under cover of more advanced ideals which fool no one except the credulous people of the United States. Here, again, we face a paradox. The American Government stands pat on and reasserts its China policies and as Mr. Young assures us, *has prepared to uphold them*. This vast area inhabited by 500,000,000 people split into as many discordant and warring tribes as Europe, must remain intact until by bombings, wholesale massacre and other concomitants of Asiatic warfare, they are unified under the rule of one satrap. *Working out their own salvation*, is the diplomatic euphemism advanced to excuse this crime against Humanity.

The Break Up of the British Empire

Why does the United States champion a program in China so diametrically opposed to its traditional attitude towards breaking down all other great imperialistic systems, especially the part she has played in the disintegration of the British Empire into a grouping of self-governing independent Dominions? Whose influence is responsible for freeing Ireland, for Canada's determined stand against imperial interference in its domestic affairs, for South Africa's declaration that a Dominion had the right to secede from the Commonwealth whenever it pleases, a right that is now being exercised by Ireland? What country alone permits and encourages Indian Nationalist agents to carry on their seditious campaign against British rule, to collect money and proselyte a heathen religion? What has been the result of this influence on the British Empire? Let us read the formula adopted at the 1926 Imperial Conference:

"The position and mutual relations of the group of self-governing communities composed of Great Britain and the Dominions may be readily defined. They are autonomous communities within the British Empire, equal in status and in no way subordinate one to the other in any aspect of their domestic or external affairs; though united in a common allegiance to the Crown and freely associated as members of the British Commonwealth of Nations."

As Mr. Young points out, "it was furthermore provided that: "Every self-governing member of the Empire is master of its destiny. It is subject to no compulsion whatever. . . . Every Dominion is now and must always remain the sole judge of the nature and extent of its co-operation. . . . The Dominions were to be able to make their own treaties and to have their own diplomatic services free from London's supervision. In closing his chapter describing the process of disintegration of the British Empire, Mr. Young says:

"In its reluctant and groping way America has had the leadership in this revolutionary shift in world conditions."

And it is being called on now to pursue that leadership. And it can be said that there can be no escape for us. . . . We are committed so deeply already that inevitably our way must be forward into world affairs."

Right. Maybe the British Tories and Conservatives love us for what we have done to their Empire. Maybe they do not. Viewed from this angle there is considerable to be said in favor of their plea for Anglo-American co-operation and solidarity. After breaking up their empire into its component parts with each independent entity serving notice that it will not be drawn into war on the side of Britain unless its vital interests will be served thereby, should the day arrive when Britain again stands with her back against the wall facing her foes, and the United States declines to come to her assistance. History in its day will record how "Powerful America" undermined the British Empire and betrayed its own kith and kin while it built up its armaments and concentrated its diplomacy to maintain the integrity and sovereignty of an Asiatic nation from which it hoped to extract a few paltry dollars in profits from trade. While we have been freeing Ireland and permitting Indian Nationalists to use our country as a base of operations against Great Britain, we have stood forth in shining armor as the Champion of China and the silent partner of Soviet Russia, willing that the British Empire be smashed and Japan converted into a vassal of Moscow, in order to preserve the open door for our right to remain in business as a charitable institution. This is a strong statement. It challenges refutation. It is something that Americans must give serious consideration to at this moment as the life of a great nation hangs in the balance.

The One-Sided Law of Self-Preservation

The United States has made its own laws and promulgated its own basic doctrines of defense, interpreting them to cover the exigencies of each situation as it arose. Our fiat has been the law in our own hemisphere and we have stood prepared at all times to go to war in defense of our policies. As a corollary to our basic Monroe Doctrine we served notice on Great Britain that we would consider it an unfriendly act should she proceed with her plans for establishing strong naval bases at Halifax, Jamaica and Esquimaux. Britain's acquiescence in our demands throws upon us the duty of defending Canada and the British possessions in the Caribbean area, just as Japan would be called upon to defend China and the Philippines under the Hirota doctrine defining her rights and duties to preserve the peace of the Far East. When a Japanese corporation sought to acquire a commercial concession covering Magdalena Bay in Lower California, our Senate rushed through a Resolution that gave us a right we now refuse to concede to Japan in her part of the world. This resolution, as explained by its proposer, Senator Lodge:

"rests on a generally accepted principle of the law of nations, older than the Monroe Doctrine. It rests on the principle that every nation has the right to protect its own safety, and that if it feels that the possession by a foreign power, for military or naval purposes, of any given harbor or place is prejudicial to its safety, it is its duty as well as its right to interfere."

This is merely the extension of the doctrine of the Persian Gulf laid down by Lord Curzon, who declared that any British official who would concede to Russia an outlet on this arm of the sea, should be considered as a traitor to his country, or words to that effect. Ponder over the Lodge Resolution and then try to fit it in with what we are doing to-day in China. Since that resolution was written into the records in 1912, aeroplanes have become the first arm of offense and defense. Under the above explanation of self-preservation, landing fields in territory adjacent to the United States controlled by foreign companies closely allied with their governments, would fall under that law. But what we denied to Japan in Magdalena Bay we have no hesitancy in exacting from China where an American aviation company co-operating with the Chinese Government has covered the country with air-lines, landing fields, petrol supply bases and aerodromes, at strategic points which menace Japan's security. Whereas with us, it is merely a matter of business, the Chinese look forward to the day when they can fly across the 450 mile stretch of Yellow Sea and drop bombs on the cities of Japan. *National Salvation Through Aviation!* is the slogan of New China, with Japan as

the first victim. The law that covers Magdalena Bay cannot be invoked by Japan for the reason that we would pay no attention to it. Our right to do as we please in China under the Open Door Doctrine has become the cardinal feature of our diplomacy and, when we piece together all the other plans, British, French, Dutch, Chinese and Russian, that are rapidly being perfected to encircle Japan from the air, we can begin to understand why the Japanese Army and Navy are alarmed and insistent upon greater appropriations for national defense. What with our Non-Recognition doctrine, financial pressure and the closing of markets to Japanese goods, Japan is being broken and beggared simply because the Powers of the Washington Conference are determined to hold China intact, if not for future trade profits, then for some ulterior political purpose such as creating a balance of power or holding the country together until the liberty-loving Bolshies can complete their plans to take it over. Whatever may be the reasons underlying our policy, events are working out along the last supposition. We are simply holding China intact and in trust for our Communist friends in Moscow, with no consideration or concern for what may happen to Japan.

Shall China be Allowed to Divide?

Let us return once more to the function of buffer states. In a book entitled "The Case for Manchoukuo" issued last March, the question of China's status was clearly set forth by this writer. Two of the humanitarian conclusions in the closing chapter of that essay on Far Eastern problems advanced as a means of preserving peace in the Pacific were as follows:

2. In combination with the other Great Powers present an ultimatum to the Chinese war-lords giving them six months in which to adjust their differences and combine in some form of centralized government representative of and responsible for the whole.

3. If they fail to accomplish this within the time limit, apply to them the principle of nationality that rules in all other parts of the world. Split the warring Chinese tribes into their natural divisions, compel them to assume their proportionate share of China's foreign debt, recognize their independence as sovereign states, admit them into the League of Nations and require them to subscribe to and sign the peace pacts. This accomplished, the Powers will be justified in intervening in their further wars and bringing pressure to bear on the aggressor who invades the territory of another state. Otherwise, the slaughter will go on!

It was quite obvious at the time of writing, that such rank political heresy would receive little serious consideration either in America, Europe, China or Japan. It was purely a personal reaction to what in the writer's mind constituted one of the most inexcusable political crimes of history, advanced not to serve the interests of any one Power or group of Powers, but from a deep, abiding and heartfelt sympathy for a people amongst whom I have lived and labored for thirty-three years and learned to love and respect. It seemed a way out of their misfortunes, a disintegration along lines that would ultimately bring them together again under some unified system such as the British Commonwealth of free nations or a Federalized grouping of sovereign states. There is less to fear from eighteen or even four masters in as many independent areas than from one Overlord whose realm covers them all, whose mandate is law before which these 500,000,000 must tremble and obey. The unification of China as it is constituted to-day can be accomplished only by the sword. Millions more of these peaceful, hard-working, inarticulate and splendid people must be sacrificed to make good an Anglo-American conception of what is best for them, a complete reversal and negation of everything we and our Fathers have fought for and established as the fundamental and guiding principles of our own civilization and liberties. The writer has not changed his views on this subject, standing squarely on and upholding these fundamental political and humanitarian principles in the face of all arguments to the contrary.

Mr. Young is the first writer to see these things in the same light and with the moral courage to set forth his views and conclusions. He devoted a chapter of his book to this phase of the problem under the title "Shall Great China be Allowed to Divide?" After a very able and comprehensive analysis of the fissiparous tendencies

which have already split China into several autonomous states, he says:

"The question now arises whether this development of separate national consciousness and interest shall be discouraged or encouraged. The problem is placed before Americans because with America chiefly will lie the decision. The formula of a united China is an American-British product, mainly American, and the British are likely to abandon it if they can be sure that their interests will be benefited.

Why Not Recognize Manchoukuo?

After outlining the complications created by the establishment of Manchoukuo and the autonomous regions of North China, he continues:

"Into this enters the factor of the critical situation in Japan. The Tokyo Government is exceedingly anxious to patch up the differences with America and Britain. Hints have been broadly given, that with the issue of national honor out of the way through the virtual abolition of the naval ratios, there will be no attempt to have an overwhelming fleet but that a quiet 'gentleman's agreement' could be reached for limitation of building. Invitations for plain talks on the future of Manchuria—accompanied by assurances that Japan really means to let that country be independent when it can stand alone—have been issued by the Tokyo foreign office. The Japanese leaders know they must soon have assistance to meet their monetary crisis—and that large loans must be made to help develop Manchuria and China—and the only places they can get these necessities are America and Britain. So, as told before, they are tentatively holding out the hand of friendship—

"The search for a formula of reconciliation is going on in Tokyo, Washington and London. Might it not be found in the independence of North China, taking in Manchuria?—

"In other parts of the world, peoples who wanted separate existences have come into nationhood, cutting old ties. Certainly Canada and Australia, which have broken away from Britain, has closer likenesses to the motherland in race, language and culture than North China has to Middle China. In Europe, Germany and Russia have had to assent to the erection of Poland, Czechoslovakia and the Baltic states. The division of China into peoples already widely separated by feelings and interests would only be in line with such developments.—

And so, Mr. Young concludes:

"At home, in recent years, we have been engaged in subjecting all our governmental methods and traditions to a sternly realistic examination. Those that will not fit the facts of the times are being cast aside, regardless of precedents. So the suggestion is offered that our foreign policies, especially the Far Eastern one, be subjected to the same sort of realistic examination; and, if it does not fit the facts of the times and the probabilities of the future, let it be revised to do so."

It has taken a long time to break the monopoly that the so-called group of Far Eastern experts have for so long enjoyed in formulating American opinion on these issues and to find an American editor who would approach them from a hundred per cent American standpoint. Mr. Young has succeeded in doing this, presenting the issues courageously and in a manner that compels attention.

The Realities of the Moment

All this leads up to the last phase of this question of buffer states, calling for a calm, realistic examination of all the facts surrounding Japan's right to invoke the same laws of self-preservation that we recognize as legal, necessary and commendatory, when applied by Great Britain and ourselves, not to mention our spiritual allies in the Kremlin to whom we conceded a charter of license to apply their own laws in Asia.

In our answer to this, lies the issue of the Pacific, of peace or war in Asia. Once more, Japan stands with her back to the wall, confronting a combination of potential foes that long ago would have precipitated a debacle in Europe. To defend herself, she unofficially encouraged the people of Manchuria to set up their own government and then, when they went further and declared

their independence, she stood by them, entered into an alliance with them and pledged herself to defend them against all foes. It is unnecessary to review all that followed, the incorporation of Jehol into the new state, the setting up of a demilitarized zone in Hopei and the autonomous movement which followed throughout all North China. Chiang Kai-shek's skilful manoeuvring which drove the Reds from the Yangtze provinces into regions adjacent to the Soviet sphere in Mongolia where they could contact with their Soviet allies and be supplied with arms and munitions, has created another tense situation. Where is it to end?

The terrific pressure of the Soviet armies all along the line from Chita to Vladivostok, Ulanbator's refusal to enter into diplomatic relations with Hsinking in order to keep Mongolia closed to conceal Russia's preparations for the next advance, Stalin's pronouncement of his intention to fight for the continued "independence," that is to say, to preserve this region as a closed buffer to hide the moves of his armies, the invasion of Shansi and Suiyuan by the Chinese Reds, the disinclination of Nanking to compound its differences with Japan or consider the question of the recognition of Manchoukuo, a general stiffening of the Soviet attitude all along the line, together with the intimation that the United States will side with Moscow in the event of a clash, has brought these issues to a head in Japan. The story of the recent army revolt in Tokyo is very ably handled by Mr. Frank Hedges in another article in this issue, so it is unnecessary to review it here. Sufficient to state that the Japanese Army and Navy have reacted to this alarming situation in the only way any army or navy could react. A new cabinet has been formed committed to uphold and enforce policies deemed essential for the preservation of the Empire.

The issues are therefore clear cut. The future of peace or war lies with "Powerful America." As we go, so will go Great Britain, Russia and China. It is a time for deep reflection, a realistic re-examination of our Far Eastern policies.

V.—What will Powerful America Do?

Sooner or later Powerful America must decide what it is going to do in the Far East. Her policies and interventions in the affairs of this part of the world have forced Japan into a corner. We have stood firmly upon our treaties, placing our own interpretation on their texts with no thought as to how they might affect the vital interests of a nation, which, since its emergence from obscurity under the guns of American warships, has been compelled to arm and rearm, fight wars and be eternally on its guard to preserve its independence against the moves of the most formidable, most merciless, most despotic military power of all Europe, a Power that is now shifting its industrial and governmental center East of the Urals where it will be immune against attack by any European combination. The only possible check on this Power and its proclaimed intention to subjugate all Asia, is the army of Japan.

The United States pinned its hope and faith on the Nine Power Treaty and it has failed us. We condemn and marshal world opinion against Japan, overlooking that the breakdown of our peace machinery is due to our own shortsightedness in not inviting Soviet Russia to the Conference Table and in refusing to hold our Celestial protégé to the fulfilment of pledges to reduce its armies. It was patent to anyone familiar with Asiatic history that Soviet Russia would stage a comeback and pursue the old traditional policies of Muscovy where they were forced to leave off by the events of 1917.

Saving the Heathen

We knew all about Heathen China. Our missionaries attended to that part of our education. Nobody told us about Holy Russia, its aims, its aspirations or its messianic rôle to impose its rule over the "non-humans of Asia." When men like Beveridge told us the truth, we laughed at him. We were concerned solely with our own messianic duty and manifest destiny. Our principle business was to save the heathen and build up a great sister-republic on the other side of the Pacific that would follow our lead, lean on us for advice and counterbalance the imperialistic systems in Asia. We listened to our missionaries, our educators and our philanthropists and contributed millions for the erection of colleges and hospitals and endowed them with sufficient funds to perpetuate the good work, until by 1929 our uplift investments overtopped our commercial stake.

The State Department "trembled and obeyed" when some missionary bishop or head of a missionary board laid down the law as to what we should do in China. These were the men who "paid the freight," men who controlled votes, whose influence reached down to the smallest village in the land. No President, or elective official would dare antagonize the Church by opposing its program in China. No Secretary of State would think of bringing pressure to bear on China for the defense of our commercial interests that might create an anti-Chinese sentiment in the United States and stop the flow of uplift contributions or give rise to an anti-American feeling in China. As Wilson refused to declare war against Turkey when we took up arms against the Central Powers, because of our immense religious and cultural stake in that country, so our similar interests in China have shaped our diplomacy along lines at times inimical to our legitimate trade interests.

I do not like the word as applied to uplift, but the whole movement is best described as a "racket." The proof lies in the figures. For every dollar of profit that came to us from our exports to China, the good people of the United States handed back at least two for charity and uplift, while our Government expended three more of the taxpayers' money to protect our right to continue in business as an eleemosynary institution. For every American engaged in trade in China, there were two uplifters on the ground to spend their profits. They asserted their right to be consulted in formulating policies and edged themselves into Chambers of Commerce and other organizations for the advancement of trade, in order to preserve their supremacy.

The American people and their Government have been guided by this element in formulating their Far Eastern policies. Many Americans have received their impressions from the young men and women of the East turned out at our higher institutions of learning as samples of what American culture and education can do towards the modernization of an Asiatic race. Fine boys, wonderful girls, splendid types, that we have every reason to be proud of. But we grabbed them young before they knew their own country, understood their own people or what they had to contend with on their return. We equipped them with a fine American education and sent them back to China to shift for themselves. There is no sadder spectacle to-day than these returned American students, especially those who equipped themselves as engineers, technicians and scientists. Few, very few, have come to the top in the service of their country. Some are there to-day, not as moulders of policies but as buffers between the West and their military or bandit employers. Their influence counts for naught in the struggle for place, power and pelf that has followed the establishment of the so-called Republic. They can do nothing but bemoan their fate and rely on their American friends to keep themselves in office. It is sad, but it is true. The rulers of China are and will remain true to type and traditions, Asiatic to the core.

But our uplift investments stand and our missionary activities proceed apace. The depression has somewhat changed conditions until there are now less than 4,000 American uplifters in China or about equal to the number of business-men. But they are very vocal, always on the job at home where they still exert a powerful influence in shaping our policies in Washington. I have nothing but the highest admiration for what they have done, what they are doing and what they hope to do in China, but the time is drawing near when the American people must approach these problems with a clear mind and face the facts as they are. Our Government is preparing, so we are told, to uphold policies in the Far East, that will cost the Nation many more billions of dollars. We may eventually be drawn into war for the enforcement of these policies. The people of America will want to know what it is all about. They will want to know what they are expected to fight for. What will we tell them? The issue as revealed by any unbiased study of the figures, reduces itself as to whether the United States is to go to war to remain in business as a charitable institution, to enforce its right to give away money and concentrate its activities on the task of reforming and uplifting a pagan nation or, whether we are to build up huge armaments for the protection of a trade that has come to us through the investments of other nations and which we build our hopes of cashing in on without putting up a dollar to create our own continuing market. The issue is either uplift or trade. If uplift, there is nothing more to be said. The American people will go to war, deluding themselves into a belief that they have been singled out by the Almighty to regenerate the world. If, however, we are really interested in trade, then the

sooner we give serious consideration to the actualities of the situation, cast overboard our old policies and recognize how closely our own interests as well as those of our Celestial protégé are linked with the future of Japan, the better it will be for our hopes of profit, peace and the rehabilitation of China.

What We Might Have Done

Had we embarked on a program of co-operation with Japan for the development of China, relying upon Japan to preserve the peace of Eastern Asia and guaranteeing our joint investments, instead of antagonizing her, calling her names and marshalling world opinion against her, China to-day might have been covered with joint Japanese-American manufacturing plants in the same manner that our capital has flowed into Canada on a fifty-fifty basis to beat the Imperial Preference plans to benefit the British Empire. We would not co-operate with Japan, as that would be a betrayal of our "Great Sister Republic" and pet charity, China, but we had no scruples about peacefully penetrating into a Dominion of the British Empire to undermine British supremacy and defeat their program of co-operation and reconciliation. As the result of our swamping Canada with American capital, the best the British could get in any program for Imperial Preference was a fifty-fifty split.

"Even that" as Mr. Young points out, "was a barren victory. American manufacturers have found that, by splitting the work between home and Canadian mills, they can operate profitably. Their goods are still going out into the Empire in large quantities. Canada has been even more deeply committed to the principle of helping this trade, for now it has many more workers engaged in it and is getting more investment and revenue. Any further British effort to halt the process would meet with stronger resistance. Also other Dominions, seeing the advantages to Canada, are inclined to open their doors to similar ones. Branch plants of American concerns have been increasing in the Irish Free State, Australia, South Africa and even India. They all enjoy imperial favor. When we find ways to take goods in exchange for our own the process can be extended indefinitely, especially into the Indian Market."

We have cracked-down on our kith and kin and made monkeys out of their economists, while those most active in the movement are blubbering about Anglo-American co-operation. "Powerful America" might have done the same with Japan as her partner in the Far East and dominated the trade of this part of the world, but our State Department was so committed to its messianic rôle, so dominated by our educational and missionary advisers and influenced to concentrate on our charitable and uplift program, that we rejected this great opportunity to tie Japan to us in unbreakable bonds that would have guaranteed the success of our policies in China.

Influenced by the Chinese and their war-yapping American journalistic advisers who protested against and killed the American loan to the South Manchurian Railway that would have paved the way towards this co-operation, avoided the Manchurian Incident of September, 1931, and kept this territory under Chinese sovereignty, we failed to see that the one sure guarantee that China's sovereignty and independence would be respected and upheld was some working or co-operative arrangement that would have linked the two nations together in a common policy and accord. Scared off by a manufactured "mass protest," we turned it down, insisting that Japan could not be trusted.

We then set out to obstruct her in every way possible, until to-day instead of that willingness to co-operate that formed the major plank of her policy towards the United States that would have been mutually profitable and linked the two nations together in a mission of peace, we have driven Japan into a corner, where she has now no alternative other than to break our hold over such few co-operative enterprises as were set up in the hope of cementing the bonds between us. We are now paying for our stupidity and the end is not yet. The billions of yen we have forced Japan to appropriate for naval and other defenses could have been available for co-operative investment not only in Japan and Manchuria, but in China itself.

So we face the facts. Japan is still our best customer in Asia. We have three times the stake in that country that we have in

China. Japan has never defaulted on her promise to pay. We do not have to maintain regiments and warships in her waters for the protection of our citizens and their properties. Are we going to sacrifice the friendship of this great Power, this good friend, customer and agent to uphold our right to give away money to China? Is such a policy wise? Is it desirable from any angle? Are we willing to stake our existence on the maintenance of outworn and outdated treaties and policies? Have we reached that frame of mind where we can afford to let Japan stew in our juice and say at this late date, "Why Bother About Japan?"

Why Bother About Japan?

"Let Japan go ahead. The cosmic process is on our side. Only let us make sure that we do not involve ourselves by loans, trade agreements or political arrangements in any situation that in the end will carry us down in the destruction which for Japan is probably not immediate but none the less inescapable."

So says Mr. Tyler Dennett in the February issue of *Current History*. As former Historical Adviser to the Department of State, Professor of International Relations at Princeton, now President of Williams College and head of the Williamstown Institute of International Affairs, Mr. Dennett is one of our foremost authorities on Far Eastern affairs. But in this statement, Mr. Dennett is wrong. He has failed to take into consideration that side of the picture we have tried to present in this review. His whole thesis is purely legalistic, based on treaties voided by the emergence of Russia as the principal actor in the drama of Asia, possessing an army of 1,300,000 with 300,000 in the Far East with which it is menacing the existence of both China and Japan. He ignores the fact that China has insolently failed to comply with its promises at Washington to reduce its armies to under a million men and instead has increased them to 2,500,000 with another million or more armed bandits and Communists ravaging the country. "Whom the Gods would destroy they first make mad," quotes Mr. Dennett.

"Thus it has been time and again with the nations of Europe, America and Asia. The madness has usually taken one form—embarkation upon a program of empire, such as that upon which Japan has embarked."

In making this statement, Mr. Dennett again wilfully ignores the history of Russian expansion in Asia, its steady absorption of territories which in less than a century has carried her to the shores of the Pacific, menacing the existence of Japan. He overlooks that all of this territory has been stolen from China, that China has surrendered her lands without a protest or a fight, that she has entered into secret alliances with Russia aimed at Japan, and that Japan has been compelled to transform itself into a military nation arming and modernizing its armies from decade to decade to keep step with the preparations for her subjugation that Russia has never ceased to push forward since 1905. He says that Japan is mad.

I have only this observation to make. God help the people of the United States if they are ever bound by treaties, alliances and international commitments, held fast in a trap and compelled to witness the tremendous preparations similar to those now progressing for the castigation of Japan. Should the Government of Mexico be overthrown, should our next door neighbor come under the control of some European Power and be transformed into a base of operations with armies strung along the Rio Grande outnumbering our own, with Mexican guerrillas in the background ten times larger, should Mexico be crisscrossed with air lines controlled by the same European Power, the American people would also go mad (and when we read of the widespread progress of Communism in South America and Mexico as reviewed in the February 15 number of the *Literary Digest* and the article on "Aliens in Subversive Activities" by Raymond Carroll in the February 22 issue of the *Saturday Evening Post*, we cannot be too sure of what the future holds in store on our own continent).

The American people would also see red and run amok. I would not like to be in the shoes of the statesmen, officials or politicians, who had permitted and encouraged this menace to grow. The American people would take the law into their own hands and never stop until the southern boundary of the United States was permanently located somewhere south of the Panama Canal. There are limits to the patience of any people. I hold no illusions about

my own. We would react in exactly the same way that the people and army of Japan are reacting to-day. The American who argues otherwise, knows nothing about his own breed.

That One Remaining Wall Against Communism

Powerful America can break Japan. In combination with Great Britain, France, Soviet Russia, China, and all the Big and Little Fellows of the League, we can, in time, smash her the same as we did Germany. But at what a cost! And then what? We will have handed over the hegemony of Asia and dominance of the Western Pacific to the Muscovite. Is that what we want? Can it be true that the American Government is now so sympathetic with the Communist State that it would associate with it to break and subjugate a heroic Nation that for eighty years following its enforced entrance into the Community of Nations, has successfully stood as the one barrier against the conquering advance of the Muscovite? Would we break down the one wall that still stands against the eastward advance of Communism, the one guarantee that Eastern Asia will not become the Spring-Board for World Revolution and Red conquest? How long would the United States itself last should Soviet Russia become the dominant Power of Asia? How long could Great Britain hold out in India? What would become of Indo-China, of Insulinde, of the Philippines?

War between Japan and the Soviet Union is not inevitable, but it is always a possibility. Japan does not seek that war. She is determined to solve her problems with Moscow by diplomacy. The new Premier of Japan, Koki Hirota, who understands the Soviet mind, will find a peaceful solution. There will be no war, if he can prevent it with honor and dignity. Only should all other means fail, then in self-defense will Japan act. The picture of Asia is before us. As public opinion in the United States decides, as the American Government swings its support, so the rest of the world will follow. The issue of the Pacific and the fate of Eastern Asia, the future even of our civilization, will depend largely on what Powerful America does at this juncture.

Conditions in China

A report by Mr. A. H. George, the British Acting Commercial Counsellor at Shanghai, on trade and economic conditions in China, 1933-1935, states that there should be a steady demand for domestic electrical appliances in China, although there is an increasingly strong competition from Chinese manufacturers. Imports during 1934 included turbo-generators and parts valued at \$3,000,000. In that year Germany secured contracts for three 15,000 kw. turbo-generators and one 10,000 kw. set, while United Kingdom firms secured contracts for a 500 kw. and a 250 kw. set. These will be included in the 1935 import figures. Electrical machinery imports in 1934 were valued at \$5,762,000, compared with \$4,996,000 in 1933. The United Kingdom was the chief supplier of electrical transformers and parts, and miscellaneous electrical machinery not, however, including the two most important groups of electrical machinery imports, viz., dynamos, generators and parts (valued at \$1½ millions), and electric motors and parts (valued at \$2 million), the bulk of both of which came from Germany.

Radio sets and parts imported were valued at \$4,575,000, against \$3,764,000 in 1933, the U.S.A. being the largest supplier, although imports from the U.S.A. and Germany decreased in the first quarter of 1935 while those from the United Kingdom and Japan increased.

In 1934 direct radio-telegraph services were opened between Shanghai and London, and Shanghai and Tokyo, and in February, 1935, a service between Shanghai and Rome.

It is expected that radio-telephone services between China and Europe and America and between important cities in China will be in operation by the end of 1935.

Equally rapid progress is being made in the expansion of local and trunk telephone services. The completion of the "Nine Province" trunk telephone system is expected this year, and there will then be telephonic communication between any two large towns in Kiangsu, Chekiang, Anhwei, Kiangsi, Hupeh, Hunan, Honan, Shantung and Hopei.

The report has been published by H.M. Stationery Office, for the Department of Overseas Trade, price 3s. net.—*The Electrician*.

A Milestone in History

Japan at the Threshold of a New Era

By FRANK H. HEDGES

WHEN officers wearing the Imperial uniform sought by machine-gun, rifle and sabre to alter the policy of the Empire of Japan to accord with their own ideas of military State Socialism, and then when these same young hot-bloods refused to lay down their arms and return to barracks in obedience to the Imperial command, all Japan was shocked as it had not been since the Imperial Restoration of 1867-68. February 26, 1936, is destined to remain a permanent milestone in Modern Japan's history, but only as time passes will it be possible to look back, perceive and evaluate the forces which were undoubtedly set in motion that snowy, wintry Wednesday morning.

Something that the Japanese people held precious and as above questioning was rudely shaken that morning, the implicit faith in the Imperial Japanese Army. It did not crumble into nothingness, of course, and it survives to-day and will continue to survive into the future, but hereafter the subjects of the Emperor will judge the army by their heads instead of merely by their hearts, as has so long been the case.

The only incident in recent years which falls into the same general category was the frustrated attempt of a young radical, son of a Member of the Diet, Daisuke Namba by name, on the life of His Majesty on December 27, 1923. The Emperor, then Prince Regent, was driving in state to open the Diet sessions when this occurred. Namba was quickly disarmed, arrested, given a fair and open trial, convicted and hung, but the incident shocked Japan more profoundly than had the Great Earthquake the preceding September which dealt the Tokyo-Yokohama district such a heavy blow in loss of life and property. That had been merely physical in its destruction and effect: this was psychological. Previously it had been impossible for the Japanese to conceive that any man with Japanese blood in his veins could entertain such an idea.

Since the February insurrection failed in its objective, despite the death of three of the most powerful figures in Japan, its effects must be sought elsewhere. That they are great indeed is unquestioned. That they are not yet clear is equally certain. Much remains to take place before the full significance of the incident can be known. There is much speculation in the Americas and in Europe as to whether the parliamentary form of government is now to triumph once more in Japan and military influence be shoved further and further into the background. Such

speculation is largely idle and is predicated on failure to understand the true situation.

What of the Future?

The really vital factor to watch is what ideas and ideology are now to govern the army and navy, what policy the armed services will advocate and attempt to persuade the nation to follow. The place of the army as a determining force in national affairs is secure. The blind idealism accorded the army by the public may be shaken greatly, but Japan cannot for a moment think of doing without its armed services or of subordinating them to forces with which they may be in conflict.

Present world conditions, not voluntary choice, make this true. No sane Japanese can fail to realize that the odds are greatly in favor of his nation's being involved in a major war, perhaps in a life and death struggle on the battlefield, before his normal life is ended. Facing this prospect, what other course lies open save to do all possible to strengthen Empire for this conflict which seems so inevitably to be approaching? Economic policy must be shaped to this end: the defense services must be built up to full adequacy: diplomatic relations must be conducted and adjusted with this dreaded probability ever in view; the army must perforce be given an important, perhaps even the controlling, voice in affairs of State. There is no alternative.

On the Continent of Asia there is a Russian concentration of approximately a quarter of a million fighting men, an unknown number of airplanes and an increasing fleet of submarines and other naval weapons at the port of Vladivostok. The Trans-Siberian Railway is being double-tracked, and an alternative rail route is being built through Siberia to the north of it. Outer Mongolia is in effect a Soviet satrapy closed to Japanese and all others save Red Russians and the Mongols themselves. Moscow's influence is extending southward in Western China in what threatens to be an encircling move. The political theories of the two nations are at variance, and the Russians have never forgotten nor forgiven their defeat of 1904-05.

At present China is helpless against the armed force of Japan insofar as inflicting a decisive defeat on that force is concerned, but it is quite capable of wearing the Japanese out if they should take the



Premier Koki Hirota, Announcing the Successful Formation of a New Cabinet, the Dawn of a New Era

offensive and endeavor to place all China under Tokyo's control. There are more than two million Chinese under arms. True they are disunited and warring among themselves, but who dares to say that this will continue forever and that the Chinese will never be able to unite against Japan. Certainly no Chinese holds that pessimistic view, being convinced at heart that sooner or later his people and his country will triumph over Japan, even though a century or so may elapse in the meantime. During this intervening period, which is the very immediate present, Japan is unquestionably building up an intense hatred of itself and a burning desire for revenge among the Chinese, an emotion which must sooner or later find vent.

An Unfriendly World

When Tokyo looks across the Pacific it sees a United States that is suspicious and that does not hesitate to tell Japan what and what not to do on moral grounds, a United States that is increasing its navy and building up its defenses. True, there is no logical cause for an American-Japanese conflict and one is most unlikely, but the psychological atmosphere is dangerous in the extreme. Nor can Tokyo be at all certain where American sympathy and American aid—moral and financial only, perhaps,—would lie in the event the Empire became involved in a major war with some third Power.

The existing relations between Japan and Great Britain are notoriously strained at the moment. There is a genuine conflict of interests here as regards the China and other world markets and

as regards mutual outlying defenses in the form of friendly buffer States, the one for the protection of the Japan-Korea-Manchoukuo group, the other for the protection of India, which has been the keystone of British policy east of Suez for long years past.

The recently concluded Franco-Soviet Pact cannot be welcome in Tokyo. Designed primarily against Germany as it undoubtedly is, the question still remains as to what aid France might afford the Soviet in the event of a second Russo-Japanese War. Has the secret diplomacy of a generation ago again come to life, and France agreed to compensate itself in the south for Russian gains in the north of Eastern Asia? How can Tokyo know?

Thumbs were turned down on Japan by every member of the League of Nations save Siam, which refrained from voting, more than a year ago at Geneva. There is a vast amount of talk abroad about a secret German-Japanese understanding, even a secret military alliance, and then Chancellor Adolf Hitler makes a speech lauding Nordic supremacy and racial pride that is so offensive to the Japanese, ever supersensitive on this question of racial equality, that such rumored alliances become nonsense.

Nowhere that Japan looks does it find a friend. It may be argued, and with considerable justification, that Japan itself is responsible for this loss of friends, that its policy in recent years has been such as to alienate all other nations and to rouse the suspicion of the world regarding its aggressive ambitions and good faith. Be that as it may, when theory is abandoned for fact Japan finds itself isolated and alone in the world. If it is to continue as a great Power, if it is even to live as an independent



JAPAN'S NEW CABINET

Foreground—Premier Koki Hirota. *From left to right on the second step*: General Toshikazu Terauchi, War Minister; Admiral Osami Nagano, Navy Minister; Mr. Takukichi Kawasaki, Commerce and Industry Minister. *Third Step*—Mr. Eiichi Baba, Finance Minister, between Premier and Mr. Kawasaki; Mr. Raisaburo Hayashi, Justice Minister. *Fourth Step*: Mr. Hidejiro Nagata, Oversea Affairs Minister; Mr. Keikichi Tanomogi, Communication Minister; Mr. Toshio Shimada, Agriculture and Forestry Minister; Mr. Keinosuke Ushio, Home Minister and holding additional post of Education Minister. *Others*—Mr. Yonezo Maeda, Railway Minister, can be seen between Mr. Nagata and Mr. Tanomogi; Mr. Shohei Fujinuma, Chief Secretary of the Cabinet, seen behind Mr. Shimada, with eyeglasses

THE STRONG MEN OF HIROTA'S CABINET



General Count Juichi Terauchi, War Minister



Dr. Eiichi Baba, Finance Minister



Admiral Osami Nagano, Navy Minister

nation, it can rely on no one but itself. It must be able to stand on its own feet alone and unaided.

This is not a pretty picture, but it is the picture which the world presents to every Japanese, be he liberal or fanatic militarist. Given such conditions, what can he possibly do save to see to it that his army and his navy are such that Japan cannot be harmed in a military way by any other Power or even grouping of Powers. He must depend upon his armed services for protection, perhaps even for independent national life. No alternative is offered, and so it is futile and silly to talk of pushing the Japanese army and navy into the complete background when State policy, both internal and foreign, is being determined.

In Keeping with Precedent

There is nothing new in this position of the army in the State in Japan. The whole history of Japan, both ancient and modern, accounts for and explains it. The Tokugawa Shogunate held temporal power under the Emperors for more than two centuries and a half because of its military supremacy over jealous rival clans, and other powerful medieval families held such power earlier for exactly the same reason. With the Restoration of 1867-68 the Tokugawa voluntarily relinquished control and all authority was returned to the hands of the youthful Emperor Meiji, including control of the Empire's armed forces.

But world conditions demanded that the young-old nation depend upon military prowess in order to achieve and maintain the place in the world it desired. It is a well-known story how the army was democratized and the samurai class abolished, how

English naval officers and French army officers first, to be followed by German later, were called to aid in the creation of the strong military organization Japan now possesses. This new army was not designed to maintain order within the realm but respect for Japan's independence, integrity and policy abroad. Japan became a great Power primarily because it became a great naval and military nation. Its spurs were won in the world with the defeat of Tsarist Russia a generation ago. Can anyone ask the Japanese to forget this? Can anyone make them believe that, no matter how admirable their other qualities may be, Japan would be where it is to-day unless it had been powerful in a military and naval way?

It is not to be wondered that in Japan the army commands a respect and almost reverence which is lacking in many countries. Farmer and merchant alike owe too much to the Empire's soldiers to forget their debt, or to fail to realize what the army may yet accomplish for the nation. This faith may have been rudely jarred by the February insurrection and its aftermath, but it is far indeed from being destroyed and may be counted upon to come back more strongly than ever when the full facts of the case, which is at present under investigation by both civilian and martial courts and so cannot be commented upon, become known to the people of Japan. There will be no sympathy with the rebellious officers and with their civilian allies, but the good name of the army will be cleared.

Direct action has always evoked admiration among the Japanese. The story of the Forty-Seven Ronin, who took matters into their own hands to avenge the death of their feudal lord, is still the most famous story in Japanese history and the Ronin

are national heroes whose memories are evergreen. There is a tendency in Japan to overlook the results of direct action provided only the motives of those resorting to it are pure and they have the courage to act. There will be no such forgiveness in this case, but this psychological trait of mind peculiar to Japan played its part in the revolt.

The bands of present-day ronin, more aptly called soshi, apparently were not concerned in the February 26 incident at all. As a rule, it is they who resort to direct action. They have been somewhat out of sympathy with army circles for some time past, and they now stand behind the new Premier whom they consider in a way to be one of their own because of his earlier admiration for their venerable leader, Mitsuru Toyama.

The Plight of the Farmer

Not only the historical but the economic background must be taken into account. In fact, it must be taken very much into account. Japan's system of modern industrialism, of which the nation is justly proud, has been built up at the expense of its greatest industry—that of agriculture. With a constantly augmenting population which had no feasible outlet by immigration and with the great bulk of the cultivatable land already in production, the only outlet open to Japan if the nation was to continue to grow and prosper was that of industrialization, and industrialization requires capital in plenty.

The result is that for decades the farmers of Japan, the majority of the population, have been taxed heavily that industry might prosper. Farmers and farm-tenants have borne an unduly heavy share of the tax burden, much of which was poured out by the Government in subsidies and other forms to build up the nation's factories, shipping lines and export trade.

Japan's export trade in particular has been in a prosperous condition during the past few years, due in part to the low exchange value of the yen and in part to other factors. Japan's agricultural industry has been suffering extremely adverse circumstances during this same period. The farmer, barely able to make a scanty living if even that, looked at his city cousin buying automobiles and well dressed and fed and had a very natural and human reaction against him.

Most of Japan's soldiers, from the highest to the lowest rank, come from the millions of pocket-handkerchief farms of the islands. They are close to the soil and their sympathies lie entirely with its tillers. When the farmer suffers the army, too, suffers. When agricultural conditions are as adverse as at present it is only natural that great discontent with the economic system should be found in the army.

The prevalence of this condition and the existence of this sentiment make the task of the advocate of State Socialism an easy one among many of the soldiers. These men have but a meagre knowledge of economics, but they do know that economic conditions are bad. When the bait of a better order of things material is held out to them, it can scarcely be expected that they will resist.

This is the background, historical and economic, against which the February 26 incident must be projected. Coupled with

it, of course, is the political. Graft and corruption among numerous party leaders have caused the Japanese public to lose faith in party government, and that advantage has swung to the military, but the political situation as such played a minor and insignificant part in the revolt.

A group of junior officers, all from the First and Imperial Guards Divisions stationed in Tokyo, led forth approximately 1,400 of their men just before dawn on February 26 to set in motion their plans for a new and better State under the ægis of the Throne. Their sincerity and patriotism, as they conceived it, can scarcely be questioned. That they were mistaken and misguided seems equally evident. That they were the unwitting dupes of cleverer, more unscrupulous and more sinister forces which have not yet come into the open may be revealed by the investigation and trials now under way, but comment on this phase must be withheld at present.

The Course of the Outbreak

The actual events of the abortive insurrection are well known. The rebels, as they were officially branded in a martial law proclamation, succeeded in assassinating the Lord Privy Seal, the Minister of Finance and the Director of Military Education; in severely wounding the Grand Chamberlain; in gaining possession of the Premier's official residence, the Ministry of War and the General Staff headquarters, as well as the Metropolitan Police Board; in threatening Japan's great liberal middle-class newspaper, the *Asahi*; in holding out from early Wednesday morning until late afternoon Saturday. Once convinced by means of bills dropped from the air, by radio and by other methods that their officer-leaders were refusing to obey the Imperial command, the enlisted men surrendered and returned to barracks, quite evidently innocent of having known originally the activities on which they were engaged. The Premier, who had been officially declared dead, emerged from his place of hiding to the surprise of the world but equally so of Japan. The Government tendered its resignation, and on March 9, the outgoing Minister of Foreign

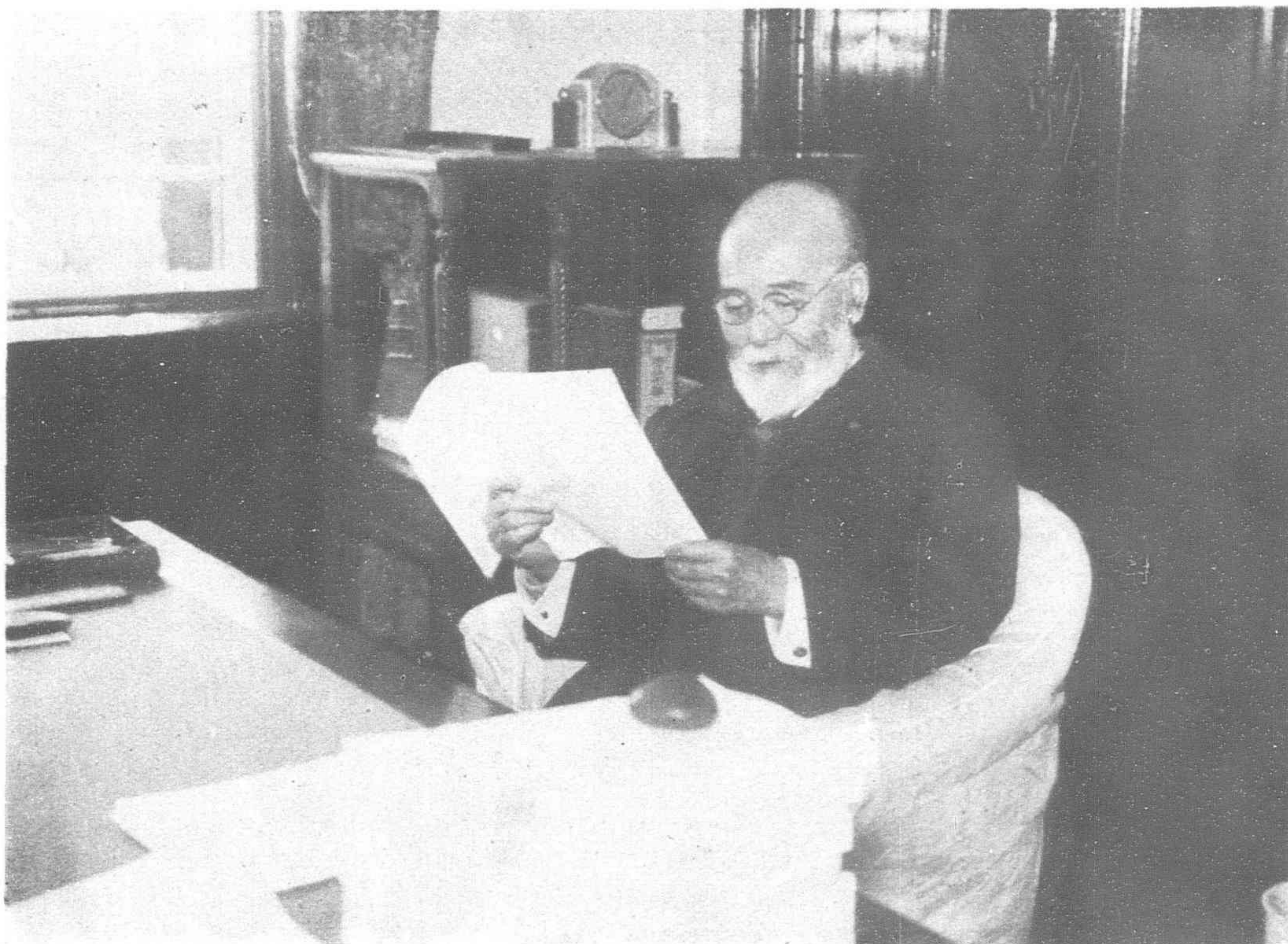
Affairs, Koki Hirota, succeeded in forming a new Cabinet. The Ambassador-Commander-in-Chief of the Kwantung Army was transferred to Tokyo and a successor named. The military members of the Supreme War Council, save the Princes of the Imperial Blood, resigned and were placed on the retired list. There are other details, but these are the main direct, tangible developments brought about by a group of young fanatics one February morning.

Facts are seldom sufficient to explain adequately any given situation, and the sketch of conditions in Japan already given must be used to supplement in arriving at conclusions or in endeavoring to predict future happenings. This latter activity is especially dangerous and difficult, and the writer has no desire to indulge in it, but certain phases do stand out clearly and distinctly from the general mist which hovers around.

Most fundamentally important of these is the attitude of the army itself. It cannot be overemphasized that no section of the Japanese State has suffered more acutely or felt more keenly



General Kenkichi Ueda, New Commander-in-Chief of the Kwantung Army and Japanese Ambassador to Manchoukuo. He Commanded the Japanese Army at Shanghai



Japan's Grand Old Man, Korekiyo Takahashi, Late Minister of Finance Beloved by all who knew him

the disgrace of the abortive insurrection than responsible army circles. The February action is utterly at variance with the desires of the higher military command. The wholesale resignations are sufficient proof of this, but coupled with it is the very sincere desire of the army to eradicate whatever evils may exist within itself and to stamp out such elements as the insurrectionists.

The hope for the immediate future in Japan lies in this movement within the army itself for reform and purification. Its place in the national scheme is secure and, under existing world conditions, must remain so. Its hold on the machinery of State has been rather loosely discussed abroad, but suffice it to say that precedent and respected custom make it necessary for the Minister of War to be a general officer, so that the little group of general officers by acting in unison can wreck any Government or prevent the formation of a new one. The continuation of the previous year's Budget in the event the new estimates are not passed by the Diet give it a financial independence which is unknown in other lands.

Portents of the Future

When Mr. Hirota sought to form the present Government, army circles objected to certain of the men he wished to have serve with him, and a compromise was reached whereby Koki Hirota was able to proceed with the formation of the Cabinet. There is nothing new or strange about this, and it does not mark a recrudescence of power to the army. It has been true with every Government formed in Modern Japan. Usually this arranging is done behind the scenes; in this case it was performed before the full gaze of the public.

There can be no doubt but that expenditures on the defense services are to be increased under the Hirota Government. That is no longer theory but fact. Those who see in this a club held successfully over the Premier by the army are blind to other existing conditions. I

have already tried to sketch the position in which Japan finds itself and the absolute necessity of its maintaining a war machine sufficient to meet any foe. Along any other path lies extinction as a great Power or perhaps even worse. The rest of the world may not like this, but it has no right to ignore patent facts simply because they are unpalatable.

Economic policy is also to be revised with a dual objective in view. One-half of this objective is the revision of the taxation system so that its burden will not lie so heavily and, it must be admitted, unjustly on the backs of Japan's millions of farmers, thus eradicating the agrarian discontent that is so fertile a breeding ground for wild-eyed theoretical economists with eggs to hatch. The other half is to prepare the nation industrially and financially for the war which is dreaded.

Dr. Eiichi Baba, in his first pronouncement of policy, roughly outlined this dual objective and stated there would be not only an increase in defense expenditures but in the General Budget. The effect on the market was bad, and Dr. Baba hastened to supplement this with a second statement in which he promised that no changes would be made of a drastic nature in the immediate

future. The manner in which Japanese markets and the yen had borne up throughout the disturbance was amazing.

As President of the Hyothec Bank, the Government land bank of Japan, from which post he stepped into the Finance Ministership, Dr. Baba should be better acquainted with agricultural economic conditions than anyone else in Japan, and in all probability long ago worked out his own schemes for their amelioration. The extraordinary session of the Diet, made necessary by the recent dissolution and General Election, will not permit time for the drafting and presentation of an elaborate plan for tax revision, so that this will have to go over until the next regular session ten months hence unless another special session is summoned in the



A Strong Combination, Premier Hirota and Ambassador Hachiro Arita. It is reported that Mr. Arita will take over the Portfolio of Foreign Affairs in the New Hirota Cabinet

meantime. This will give business time to adjust itself thereto.

Essential Preparations

Much of the economic policy of Japan has been dictated for some time past by military considerations. Industries have been promoted and fostered which can never be expected to pay their own way against world competition and which are economically unsound in Japan but which are essential to the State. Undoubtedly Japan feels it necessary to make itself economically independent of all foreign sources in case blockade or sanctions close the world's markets to it in time of war.

Reserves of certain vital wartime commodities have either been built up in the country or are in process of being so built. The oil control law is one instance of this. There are others. The promotion and fostering of foreign trade, although it would suffer a severe blow if not total interruption in the event of war, is bringing foreign capital into Japan for possible use later, while capital already here is not allowed to leave the country except by special permission in each individual case, permission none too frequently granted. Tokyo is far from certain of where it could float wartime loans abroad, and might have to depend entirely upon domestic issues. At least, it would like greatly to be in a position enabling it to do so.

In foreign affairs no radical change is expected. The new Premier has himself held the Foreign portfolio for several years past, and his policies are well established and known. Nothing has occurred since February 26 to necessitate any material change in them, and hence none need to be expected.

If Mr. Hirota can see his way clear to pursue a practical foreign policy that will tend to lessen the danger of a foreign war he can be absolutely depended upon to do so. He has full knowledge of the world, of the comparative military and economic strength of the nations and of the tremendous and paralyzing cost of a modern war even to the victorious nation.

It cannot be said that a war between Japan and some Japan, a milestone at present unnamed Power is inevitable and that Japan is retrogression.



General Kohei Kashii, as Commander of the Troops enforcing Martial Law in Tokyo during the Recent Military Insurrection, he established a remarkable record in handling efficiently a situation fraught with grave danger to the Empire

therefore preparing for Der Tag. If what I have written conveys this impression—and I am aware that it may have—it is a wrong impression, not intentionally conveyed and is corrected without qualification here.

What is obviously true is that Japan fears a foreign war is approaching and that the only possible safe line to pursue at present is so to strengthen the Empire in military, economic and other ways as to increase the chances of a Japanese victory. In this respect its policy differs from that of no other nation. The difference lies in the exposed and dangerous condition in the world in which Japan stands, in the fact that the chances of the Empire's becoming involved in major warfare are greater than is the case with most nations.

This article may seem to have departed considerably from a presentation of the February 26 insurrection and its immediate aftermath, but in reality it has not. That incident cannot be even dimly understood until it is fitted into the general background of the picture of Japan to-day. It was an extreme symptom of economic and nationalistic suffering and misguided egoism, but is in no way typical of the general condition of the Japanese State or society. Like a boil, it has broken and the poison is now being drained off, leaving the system in a more purified condition. Army, Government, finance and every other element in the Empire has been rudely and most uncomfortably awakened to a serious trend in one section of society, and all are aware of the need for genuine co-operation in curbing this trend. In view of this the discussion as to whether parliamentary politics are to be revived or not in Japan becomes academic. What is of vital importance is that the military will—from the Japanese standpoint the military must—continue to play a vital rôle in the formulation of the Empire's policies and that the military is determined to eliminate from its own ranks those persons, theories or practices which are detrimental to itself, to Japan and so to the world at large. February 26 is a milestone indeed for which should mark progress rather than

NEW BRIDGE IN JAPAN

The Osaka prefectural civil engineering bureau will begin construction next August on a half mile bridge across the Yodogawa, near its mouth. It will be the longest span in the Osaka-Kobe district, 765 meters long and 17 meters wide, longer by 29 meters than the Yodogawa Ohashi, the longest span in the prefecture at present.

The proposed span is a unit of a three kilometer inter-prefectural highway linking Dempo-machi, the industrial center of Nishiyodogawaku, Osaka, with Amagasaki, via Fuku-machi, Dekijima, and Tatsumibashi across the Samondonogawa. The highway, which will be 22 meters wide, will represent a total outlay of Y.5,160,000 and will be completed during the 1939-40 fiscal year.

The bridge will consist of a series of arches, each of which will extend 65 meters, with the apex standing 10 meters above the bridge floor. These arches will stand on 30 meter concrete piers, 23 meters of which will be under the water.

The Hyogo prefectural government is now introducing a vast improvement in the old Hanshin national highway between the east end of Kobe and the Tatsumibashi, on the eastern border of Amagasaki, where it will meet the Osaka portion of the highway.

Construction of this three kilometer highway was originally scheduled to get under way late in the last fiscal year, but the enormous flood and typhoon disaster on September 21, 1934, delayed the start of this project.

The Osaka and Hyogo prefectural governments are planning two more trunk highways between Osaka and Kobe, one skirting the Hanshin seashore, and the other traversing the hilly portion north of the Hankyu tracks, while the Osaka prefectural government is now constructing another highway linking Osaka with Itami. These, together with the Hanshin national highway, will give the Osaka-Kobe district four trunk roads.

Developments During 1935

Record of Year's Achievements by the British Thomson-Houston Co. is Reviewed

THE value of research to the electrical industry is readily indicated by the large amount of investigational work carried out year after year by such a firm as the British Thomson-Houston Co., Ltd., and this research work is frequently an indication of the progress of the industry.

During the past year a great deal of important work has been done on electric discharge lamps and vacuum tubes, the high efficiencies of the former opening up several fascinating fields of advancement. It is interesting to note that Mazda Mercera lamps are now in use in all parts of the country on many miles of roads and under various other conditions of service. Research on thyratrons and rectifiers, and photo-electric cells has continued, while investigation of the characteristics and properties of cathode ray tubes for television purposes has been carried out. In connection with television much interesting work has been done and a complete picture scanner (with sound) has been made. The Chemical and Metallurgical section of the Laboratory has conducted extensive investigations on the properties of various materials, while in connection with insulations, research work has been done on synthetic resins, varnishes and moulding powders.

Several important developments in cinema and sound amplifying equipment have been made, these being recorded later in this article.

Turbo-Alternators

During the year the B.T.H. Company completed manufacture of the 50,000 kw. 2-cylinder turbo-alternator for the Ironbridge Generating Station of the West Midland Joint Electricity Authority, the alternator for which is wound for 33,000-volts. The turbine operates at a steam pressure of 375 lb. per sq. inch gauge at the stop valve, and a total steam temperature of 750 degrees F. The turbine exhausts into a vacuum of 28.9-in. of mercury at 50,000 kw. load, and the feed water is heated by steam extracted from the turbine to a temperature of 315 degrees F.

Two B.T.H. 30,000 kw. turbo-alternators have been installed, one in the Neepsned Generating Station of the Sheffield Corporation and the other in the North Wilford Power Station of the Nottingham Corporation. The turbines are of the 2-cylinder type, the steam conditions being 600 lb. per square inch gauge pressure, with a total temperature of 825 degrees F.

The B.T.H. Company has also completed a 30,000 kw. 3,000 r.p.m. turbo-alternator for the Spondon Generating Station of the Derby and Notts Electric Power Company. The turbine operates

with steam at 350 lb. per square inch gauge, the total temperature being 685 degrees F.

There is also in course of manufacture a 51,600 kw. machine for the Kearsley Power Station of the Lancashire Electric Power Co. The turbine runs at 1,500 r.p.m., and is of the 2-cylinder type designed to operate at a steam pressure of 600 lb. per square inch gauge, and a total temperature of 800 degrees F. The alternator of this set is also wound for 33,000-volts.

A third B.T.H. 75,000 kw. turbo-alternator is in course of manufacture for the Barking Power Station of the County of London Electric Supply Co., Ltd.

The B.T.H. 30,000 kw., 3-cylinder extraction type turbo-alternator at the Dagenham Works of the Ford Motor Co., continues to give good service. The turbine operates at an initial pressure of 1,200 lb. per square inch gauge, with a total steam temperature of 725 degrees F.

In addition to the turbo-alternators mentioned above, a number of smaller capacity machines of high pressure, extraction and back pressure types have been manufactured.

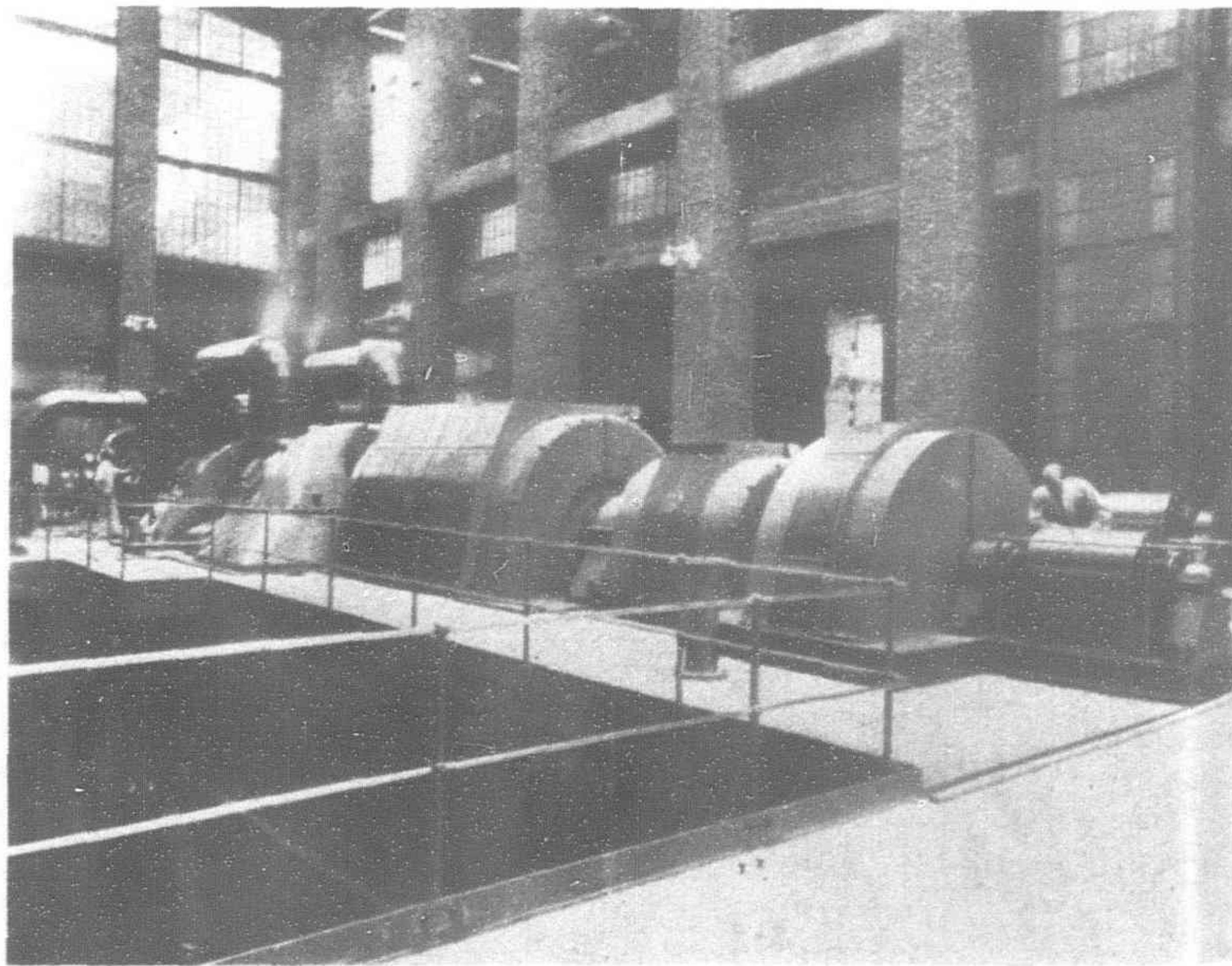
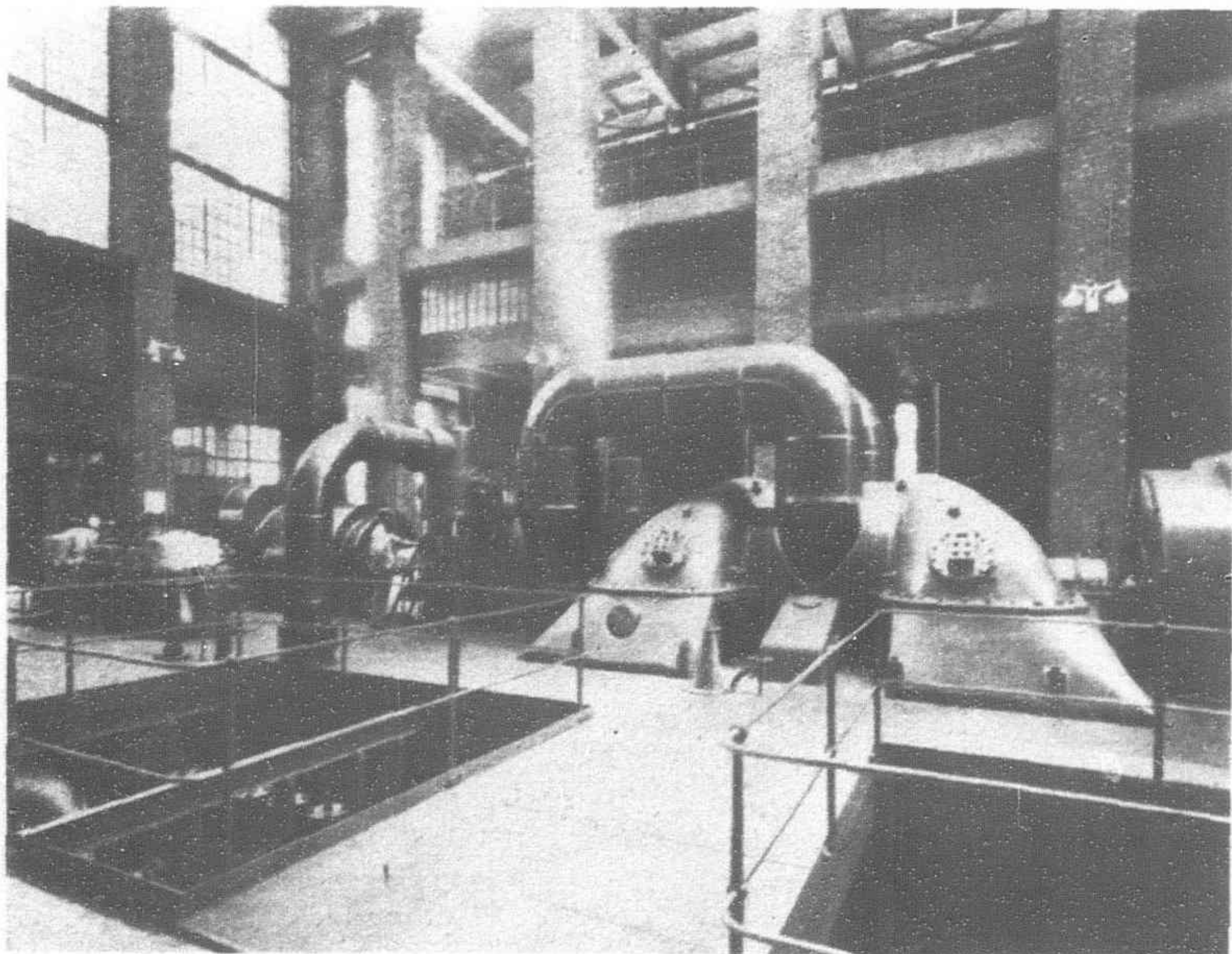
Switchgear

Attention has been directed towards the development of high-speed oil circuit-breakers of both double- and single-break design.

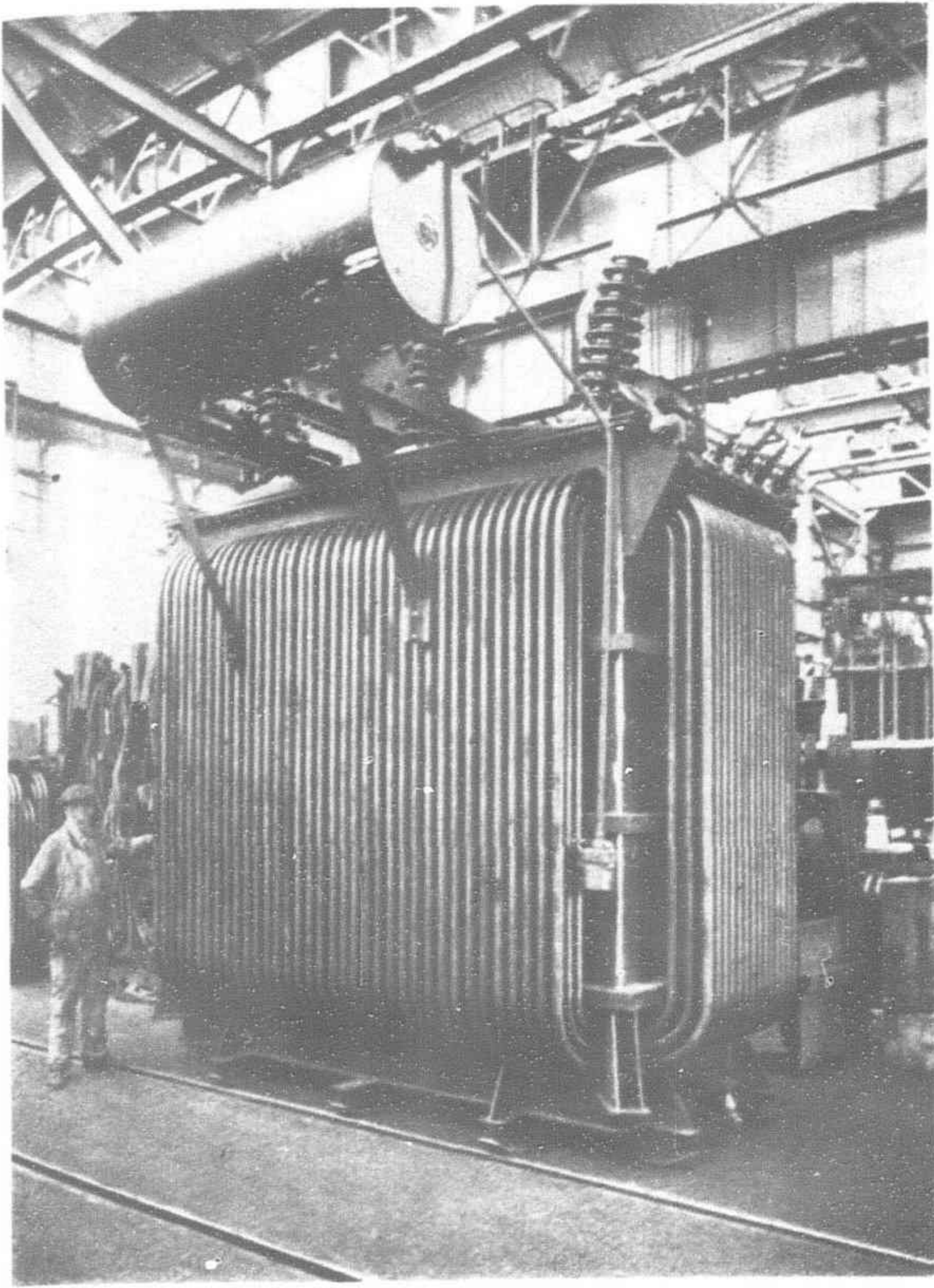
The growth of interconnections at 132 kv. and at lower voltages has indicated the necessity for speedy interruption of faults to prevent widespread disturbances, though in the case of overhead systems the majority of faults are of a transitory character, enabling the supply to be restored by immediate reclosure. High speeds of breaker operation of the order of 6-cycles or less have been made possible by improved designs of arc-control devices, some utilizing self-generated gas pressure, and others the gas pressure so generated augmented by external means.

A comprehensive program of short-circuit rupturing capacity tests has been carried out, and many test certificates have been issued during 1935. The majority of these tests have been made on complete switching equipments as the B.T.H. Co. has been one of the first to recognize that not only the oil circuit-breaker but also the bus-bars, connections, supports, plug and socket contacts and the current transformers must also be suitable for the short-circuit rating.

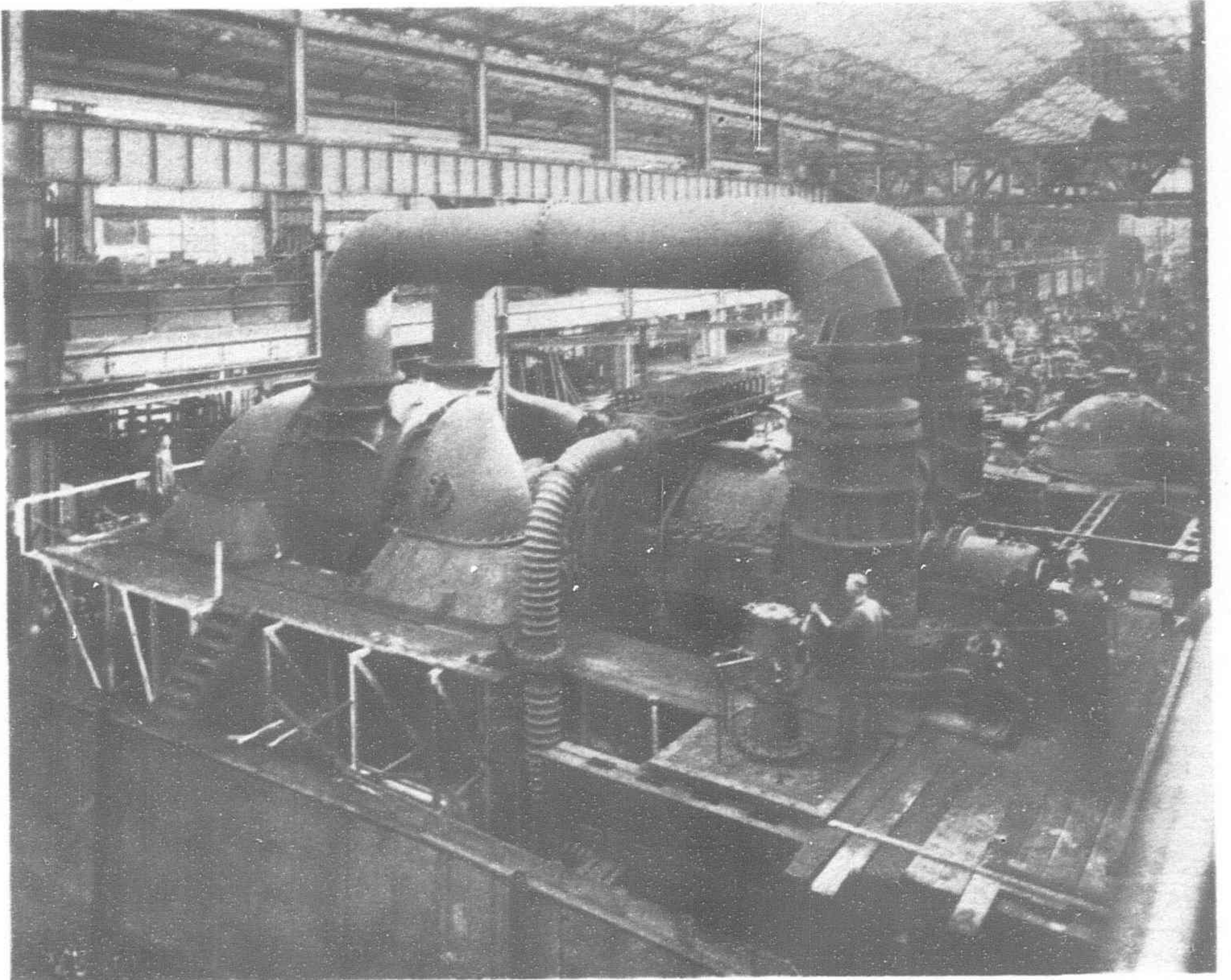
The question of impulse voltages with particular respect to protective measures against lightning and other transient voltages.



The B.T.H. 30,000 kw. Turbo-Alternator installed at the Ford Motor Co's Works, Dagenham. Picture at right shows electrical end of the turbo-alternator



One of eleven 88 kv. primary 3/6/6 phase secondary transformers manufactured at the B.T.H. Rugby Works



The 50,000 kw. Turbo-Alternator for Ironbridge Generating Station of the West Midland Joint Electricity Authority under construction in the B.T.H. Rugby Works

has been closely investigated, the lightning generator at the Willesden Works having been utilized throughout the year, enabling tests up to 1,000,000-volts on the various standard waves to be regularly carried out. The generator is the largest of its kind in the country, having a terminal voltage of 1,500,000 and an output of 17,500 watt seconds.

The B.T.H. Co. were the pioneers of outdoor metal-clad switchgear for the larger power stations, and a new design has been produced in which isolation of the oil circuit-breaker is accomplished by oil-immersed isolators in place of plugs and sockets previously utilized. This design incorporates duplicate bus-bars and duplicate breakers of the single-break type, having an interrupting capacity of 1,500,000 kva; oil-filled isolators; and bakelized paper-insulated bus-bars enclosed in a metal shield, allowing complete phase-isolation and physical separation of the bus-bars as in former designs. An order for an important power station has been received covering 33 kv. switchgear of this type.

To meet the increasing use of electricity in mines, the B.T.H. Co.'s lines of flameproof switchgear have been modernized, new features have been added and Buxton flameproof certificates obtained covering the complete range of switchgear and its accessories.

New oil circuit-breakers have been developed and tested, including a round-tank arc-control breaker having a rating of 2,000 and 3,000-amperes at 6.6 kv. and 11 kv., and a short-circuit interrupting capacity of 750,000 kva.; similar breakers having been developed for 500,000 kva. at 22 kv. and 33 kv.

The B.T.H. Co.'s line of rural distribution switchgear has been extended by the introduction of a pull-down switch-fuse which meets the requirements of an inexpensive device for the protection of pole mounted transformers, and which can be quickly and conveniently rewired from ground level.

Transformers

There has been a further substantial increase in the output of all types of transformers. Amongst the largest completed were several for the Central Electricity Board. These included one equipment of 60,000 kva., 132/33 kv. with co-ordinated insulation; two of 45,000 kva. 132/32 kv; two of 30,000 kva., 132/33/11/6.6 kv.; and two of 10,000 kva., 33/11 kv. These B.T.H. transformers are all 3-phase, 50-cycle units, and are provided with built-in "on load" tap changing gear.

Amongst the interesting equipments in course of manufacture are two 12,500 kva., 110-66/11 kv., 3-phase, 50-cycle oil immersed,

forced water cooled, co-ordinated transformers for the Madras Government Hydro-Electric Development scheme at Mettur; these transformers will be impulse tested. Mention may also be made of a 10,000 kva., 30/3.3 kv., 50-cycle, 3-phase transformer with "on load" tap changing gear for Calcutta, and four 1,667 kva., 110/44 kv. single-phase, 50-cycle transformers with "on load" tap changing gear for Tasmania.

There has been marked activity in connection with rectifier transformers, and amongst the important orders in hand is one for a number of air blast cooled equipments for the London Passenger Transport Board. There are also being manufactured eleven 1,667 kw., 88 kv. units for use with the regenerative rectifiers being supplied to the Electricity Supply Commission for the Cato Ridge-Durban, and the Glencoe-Volksrust sections of the South African Railways.

The demand for small and medium sized distribution transformers continues to increase, a significant and gratifying feature being the large number of repeat orders received. A new development is a portable mining type substation, in which H.V. and L.V. flameproof switchgear is applied to a special low height mining type transformer.

A number of reactors of both the cast-in-concrete and oil immersed types have been built, and an order is in hand for a number of large 66 kv. oil immersed copper shielded equipments for the Central Electricity Board.

Marine

During the year the electrical propelling machinery for the Port Jackson & Manly Steamship Co.'s double ended passenger ferry boat *Bellubera* was completed and shipped to Sydney, Australia. It will be recalled that this vessel is being converted to Diesel-Electric drive with propelling machinery operated on the B.T.H. patented controlled current system. The equipment for the vessel, for which the B.T.H. Co. are the main contractors, comprises four 5-cylinder Harland & Wolff 2-stroke engines, each rated 400/450 b.h.p. at 600 r.p.m., coupled to a B.T.H. D.C. generator rated 320 kw.; four propeller motors each rated 615 h.p., 790 r.p.m.; two sets of single reduction double pinion helical gears; and two bridge control stations.

The Diesel-Electric tug *Lectro* built for the Union Lighterage Co., Ltd., by Messrs. Henry Robb, Ltd., and fitted with electrical equipment by the B.T.H. Co. has now completed two years of successful service on the Thames. It is interesting to note

that careful records of the operating and maintenance costs made during this period, prove that the type of equipment installed in the vessel is a sound economical proposition.

During the year orders have been received for twelve direct coupled D.C. motor driven scavenging blowers for marine service, eight of which are for the Union Castle liners building at Harland & Wolff's, Ltd., in Belfast. These blowers are the largest units of their type that have ever been built in England, having a capacity of 31,000 cu. ft. against a delivery pressure of 3.42 lb. per square inch gauge, and running at a speed of 2,800 r.p.m.

Electrical equipments consisting of turbo-generators, motors and control gear have been manufactured for the auxiliary services on several vessels, and particular mention may be made of the equipment installed on the P. & O. liner *Strathmore*. This comprises three 550 kw. turbo-generators and a considerable number of electric motors and control equipments for operating the whole of the refrigerating machinery.

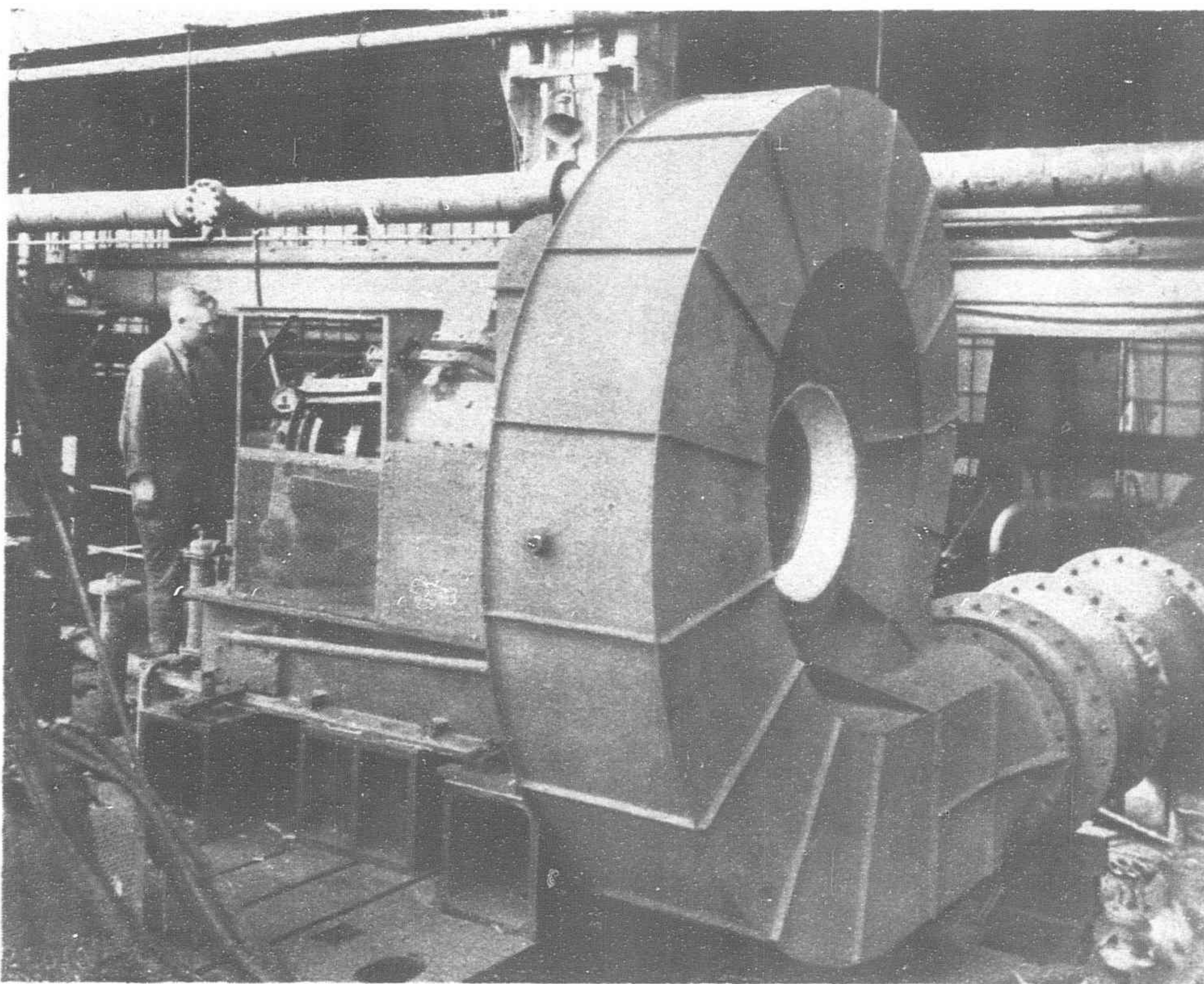
In addition, the following are some of the other important orders received:—Four 220 kw. generators for the Atlas Diesel Co., Ltd.; three 450 kw. turbo-generators for Vickers-Armstrongs, Ltd., for a vessel of the Union Steam Ship Co. Ltd., of New Zealand; main and auxiliary switchboards for Alexander Stephen & Sons, Ltd., for a vessel of the Tasmania Steam Ship Co.; two motor-driven blowers, each 26,000 cu. ft. per minute, for Sir W. G. Armstrong, Whitworth & Co. for Union Steam Ship Co., of New Zealand; and eight 300 kw. generators for John Brown & Co., Ltd., for New Zealand Shipping Co.

Railway Electrification

An order of outstanding interest was that for twenty mercury arc rectifiers for use in connection with the electrification of the South African Railways. The order for these equipments was received by the B.T.H. Co. through their South African representatives, Messrs. Wilson & Herd, Ltd., from the Electricity Supply Commission, and is the largest single contract ever placed for mercury arc rectifiers for inverted operation. Inverted operation of the rectifiers is effected by means of grid control. The contract also includes a large number of track high-speed circuit-breakers.

As regards 3,000-volt rectifiers it is interesting to note that the B.T.H. Co. has now built or has under construction a total number of rectifiers which is believed to exceed one-third of the world total.

Amongst orders received from the London Passenger



One of the eight B.T.H. 31,000 cubic feet minute scavenging blowers for marine service, driven by D.C. motor rated 590 b.h.p., 2,200/2,800 r.p.m. These units are the largest of their type ever built in England

Transport Board is an additional 1,500 kw. steel tank mercury arc rectifier equipment which is being installed in Holloway Road Substation. This substation was originally equipped with two such units as part of the large contract carried out by the B.T.H. Co. in connection with the extension of the Piccadilly Railway from Finsbury Park to Cockfosters.

Another order, now nearing completion, is for three 2,000 kw. rectifiers with all switchgear and control gear for a new substation at Tower Hill, to take care of increased traffic on the District and Metropolitan Railways.

The B.T.H. Co. also has in hand plant for increasing the capacity of the two existing substations at

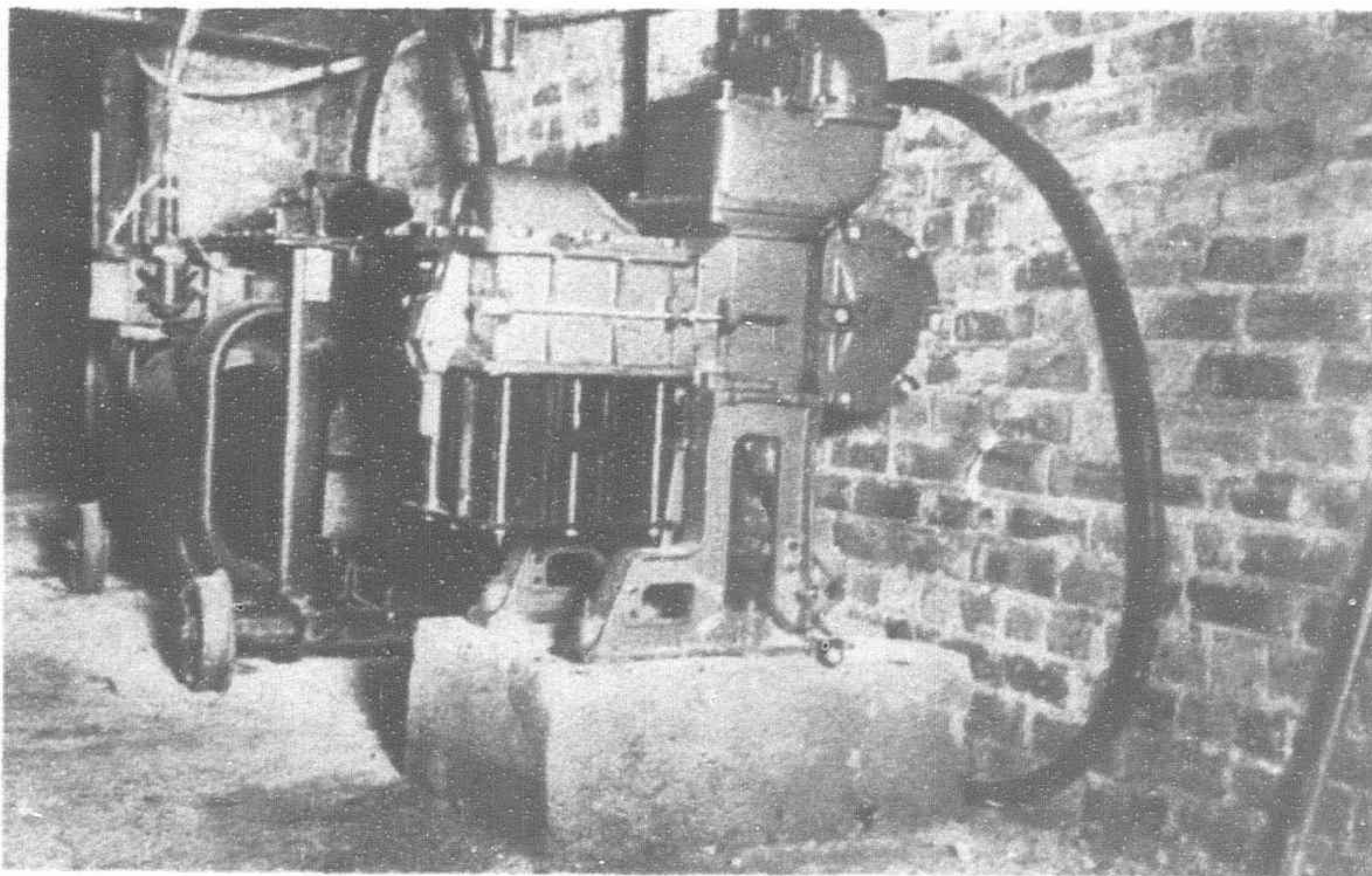
Hendon and Burnt Oak on the Hampstead line, between Golders Green and Edgware. This includes a 1,500 kw. rotary converter to be installed at Burnt Oak, which is at present equipped with two 1,200 kw. rotary converters; and two 1,500 kw. rectifiers for installation at Hendon, where one of them will replace an existing rotary converter. This order is of special interest, since Burnt Oak was the first railway automatic substation to be installed in England, and was equipped with B.T.H. apparatus; whilst Hendon substation contains the first steel tank rectifier to be built in England, this also being of B.T.H. manufacture.

During the year three rectifiers rated 500 kw. 600-volts were supplied to Associated General Electric Industries, Ltd., for service on the tramways system of Brisbane, Australia.

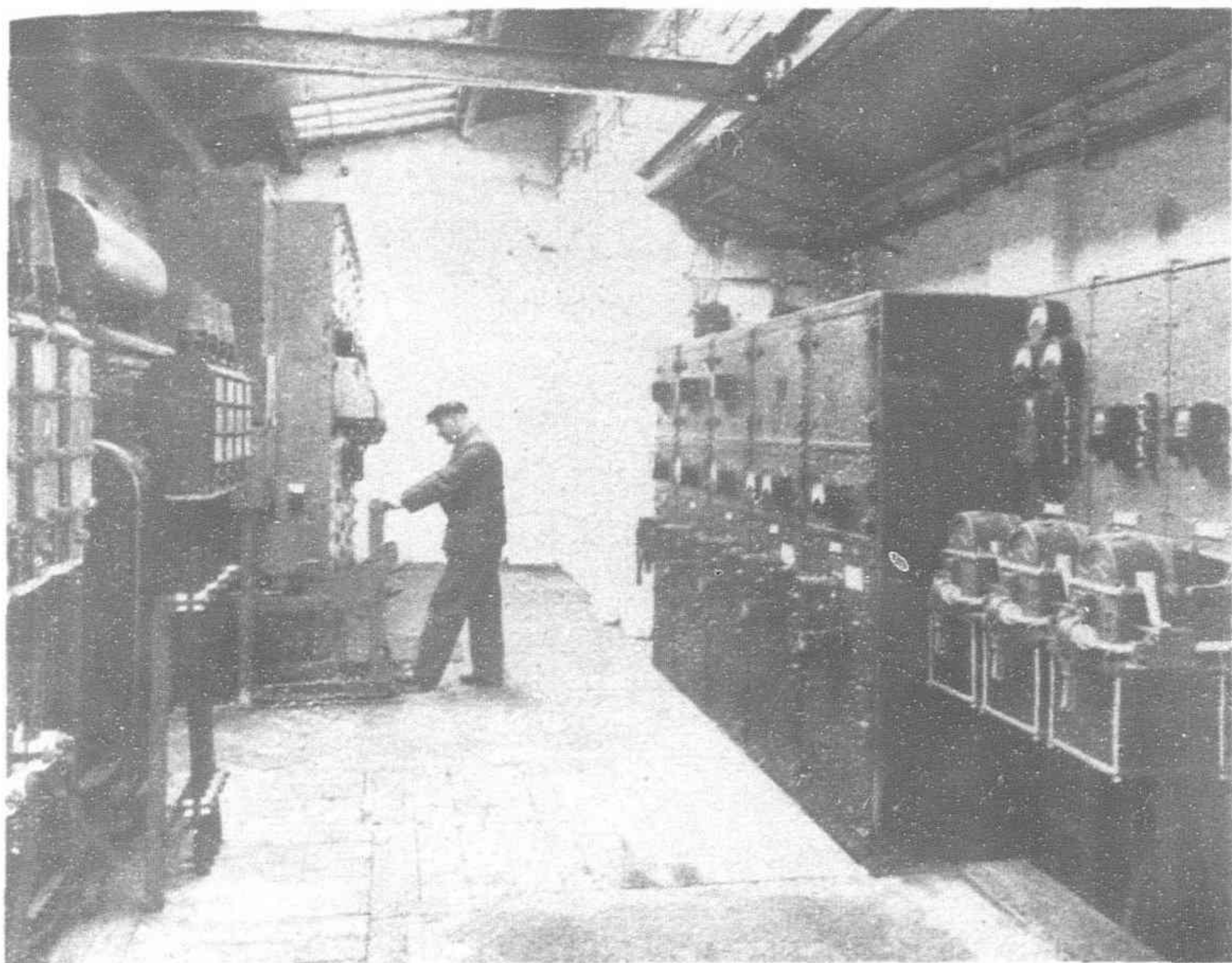
Industrial Engineering

Rolling Mills.—In connection with the change-over of frequency from 25 to 50-cycles at Messrs. Birchley Rolling Mills, it was necessary to raise the power factor, which had been 60 per cent to 70 per cent on 25-cycles, to a monthly average of 90 per cent. The four mills are driven without flywheels by B.T.H. induction motors having a very large overload capacity and operating at a low load factor. The shunt type phase advancer was chosen for these conditions, and each of the mill motors operates in conjunction with a shunt phase advancer which raises its power factor at all loads, except extreme overloads, to unity.

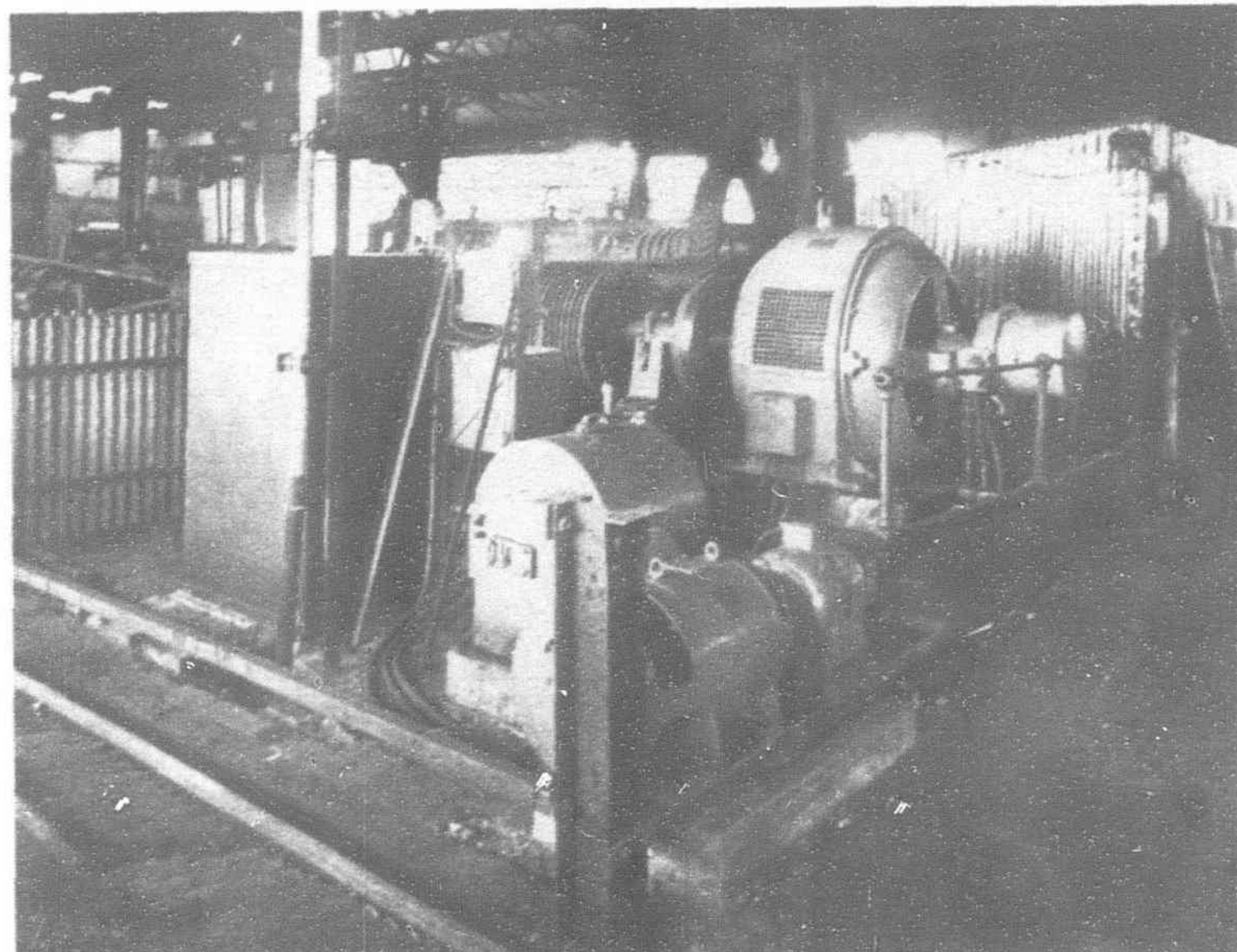
Another interesting development in power factor improvement of rolling mill drives is included in an order recently received for complete driving equipment (including gears) for a mechanized sheet mill. The equipment consists of a single reduction double helical gear, with flywheels overhung on the pinion shaft, capable of dealing with peaks up to 8,000 h.p., driven by a 700 h.p., 246 r.p.m.,



B.T.H. mining type transformer and switchgear installed in a colliery



A B.T.H. 300 h.p. slipring induction motor, with phase advancer and control gear, installed at Birchley Rolling Mills, Ltd., Oldbury



Substation at Birchley Rolling Mills, Ltd., showing B.T.H. 5,500-volt vertical plugging switch on left, and 8-panel switchboard on right

7,000-volt slipring induction motor, with a combined phase advancing and slip regulating set.

Amongst other rolling mill drives, mention may be made of a 500 h.p., 100/190 r.p.m., D.C. motor with rotary converter to drive a 12-in. strip mill; an 800 h.p., 585 r.p.m., induction motor with auxiliary motors and control gear driving an 18-in. bar mill; and a 750 h.p., 494 r.p.m., induction motor and control gear for driving a sheet mill rolling "Staybright" steel in the works of Messrs. Firth-Vickers Stainless Steels, Ltd.

Electric Winders.—Several important Ward Leonard electric winder equipments have been completed for South Africa. These include two which are amongst the largest in the world, namely, a 4,150 h.p. rock hoist and a 2,440 h.p. man hoist equipment, both of which are for winding to a depth of 5,000-ft., for Grootvlei Proprietary Mines, Ltd.; a 1,424 h.p. set for Crown Mines, Ltd., 15B shaft; two 2,876 h.p. winders for East Rand Proprietary Mines, Ltd.; and one 1,850 h.p. rock hoist and one 1,700 h.p. man hoist for Van Dyk Consolidated Mines, Ltd.

Included amongst the orders received mention may be made of a 320 h.p. Ward Leonard Ignier equipment for Blackwater Mines, Ltd., New Zealand; and two 1,100 h.p. geared A.C. winders and a Ward Leonard 932 h.p. equipment for East Rand Proprietary Mines, Ltd.

Excavators.—Equipments have been supplied to Messrs. Ransomes & Rapier, Ltd., and Messrs. Ruston Bucyrus, Ltd., for all types of electric drives, comprising three D.C. equipments, twenty-six A.C. equipments, two constant current equipments, and four Ward Leonard equipments, for service both in England and abroad.

An important order received by the B.T.H. Co. was for a complete Ward Leonard equipment for an excavator which will be built by Messrs. Ransomes & Rapier, Ltd., for removing overburden from the ironstone at Messrs. Stewarts & Lloyds' Works at Corby. This machine will be larger than any machine previously built in England, and will be driven by a synchronous motor of 650 kva. through generators having their characteristics specially arranged to suit the various motions.

Paper Mills.—The A.C. sectional drive has been installed for the largest newsprint machine in the world which is in the new extension to the Kemsley Mill of Messrs. Edward Lloyd, Ltd. The equipment is designed for a maximum paper speed of 1,400-ft. per minute, and the total motor ratings of the A.C. commutator motors employed in the drive amount to over 2,000 h.p.

An interesting B.T.H. sectional drive has been installed which operates on the "synchronous tie-in system"; which is new in England. The paper machine, which is 134-in. wide, is driven in nine sections, and has a paper speed range of 45 to 600-ft. per minute. Each section is driven by a B.T.H. D.C. motor supplied from the mill system in series with a common reversible booster. The lower part of the speed range is obtained by variation in armature voltage on the section motors, and the higher speeds are obtained by field weakening. A low voltage generator is coupled to the

booster set from which the section motors are supplied to give inching and steady running creeping speeds. Each section motor is coupled through a belt and cone pulley drive to a Selsyn, all the Selsyns being electrically connected to a common master Selsyn.

Rubber Mills.—Two 600 h.p. and three 300 h.p., H.T. synchronous induction motors for driving rubber mills have been built by the B.T.H. Co. These are provided with special control gear to enable quick stopping in emergency to be obtained by means of dynamic braking. This system makes the provision of expensive clutch brakes unnecessary and reduces maintenance costs.

Three 100 kw. motor generator sets were built to supply variable speed D.C. motors for other rubber processes, including 150 h.p. and 100 h.p. calendar motors operated by a reversible booster system of variable voltage control with dynamic braking, and two 100 h.p. extruder motors with control gear giving variable speed by shunt field control.

Machine Tools.—There has been a great increase in the demand for electrical equipment for the machine tool industry. Amongst the outstanding orders received, mention may be made of a Ward Leonard equipment for a 50 h.p., 7-ft. by 7-ft. by 20-ft. tandem table planer, having a 10 to 1-speed range, and a number of 25 h.p. equipments for use with veneer cutting machines. Wheel lathe equipments supplied include complete electrical equipment for machines driven by 2-speed slipring motors rated at 60/30 h.p. There has been manufactured a great number of frequency changer equipments for giving a high frequency supply for the operation of high speed tools, and speeds of 24,000 r.p.m. have been attained.

Sound Reproducing

An interesting item has been a special receiver and amplifier rack developed for the *News Chronicle* Wireless for Hospitals Fund in collaboration with the B.B.C. and Fund Engineers. The equipments each consist of a receiver unit, two power amplifier units, and control and distribution boards in rack and panel form. These receivers are for use in hospitals for the general distribution of sound to headphones and loud-speakers in the wards, and several equipments have already been installed.

Another noteworthy order is that obtained from the Midland Radio Relay Co. for the complete equipment for their new station at Rugby, and for the supply of all loud-speakers for the scheme. Many novel features are incorporated in the equipment including a volume range expander panel, which compensates for the restricted volume range inherent in all sound amplifier work. Special 100 watt power amplifiers with low harmonic content were developed in the course of the work, and it is expected that the station, when completed, will have a speech circuit output of approximately one kilowatt, and will be capable of supplying 3,000 subscribers.

Another new picture projector mechanism has been developed for the smaller cinemas, designed to work in conjunction with the

(Continued on page 130)

The Yushan-Nanchang Railway

Opening of New Line Takes Place Linking the Provinces of Kiangse and Chekiang

THE completion and opening to traffic of the Nanchang-Yushan section of the Chekiang-Kiangsi Railway in January last has opened up the vast mineral resources and agricultural markets of Kiangsi province to coast port trade, and, further, has given rise to the hope that in two years Shanghai will be linked with Canton by rail, by connecting with the Canton-Hankow Railway at Chuchow, which will mean that China will at long last be able to tap the extensive mineral and agricultural wealth of her interior provinces, with Canton, Hangchow, Shanghai and Hankow as the principal avenues of export to foreign countries.

The rapid building of the Nanchang-Yushan section, a stretch of 292 kilometers (185 miles), within a year, has lent impetus to

all the other projects, the completion of which will link the northern and southern ports by an iron road. The bridge across the Chientang River at Hangchow is expected to be finished some time next year, and work is proceeding apace on the Yushan-Pinghsiang and the Pinghsiang-Chuchow sections: so it is estimated that by the end of 1937, or the beginning of 1938, there will be a regular through rail service that will take passengers from Shanghai to Hangchow, across the Chientang River Bridge at Hangchow to Kiangpien, thence on to Nanchang, Yushan, Pinghsiang and finally to Chuchow to connect with the Canton-Hankow Railway for either Canton or Hankow.

The road from Nanchang to Yushan crosses the Fu River by a 500 meter bridge at Liangchiatu, about thirty miles from



The Liangchiatu bridge over the Fu River, longest structure of its type in China, 500 meters

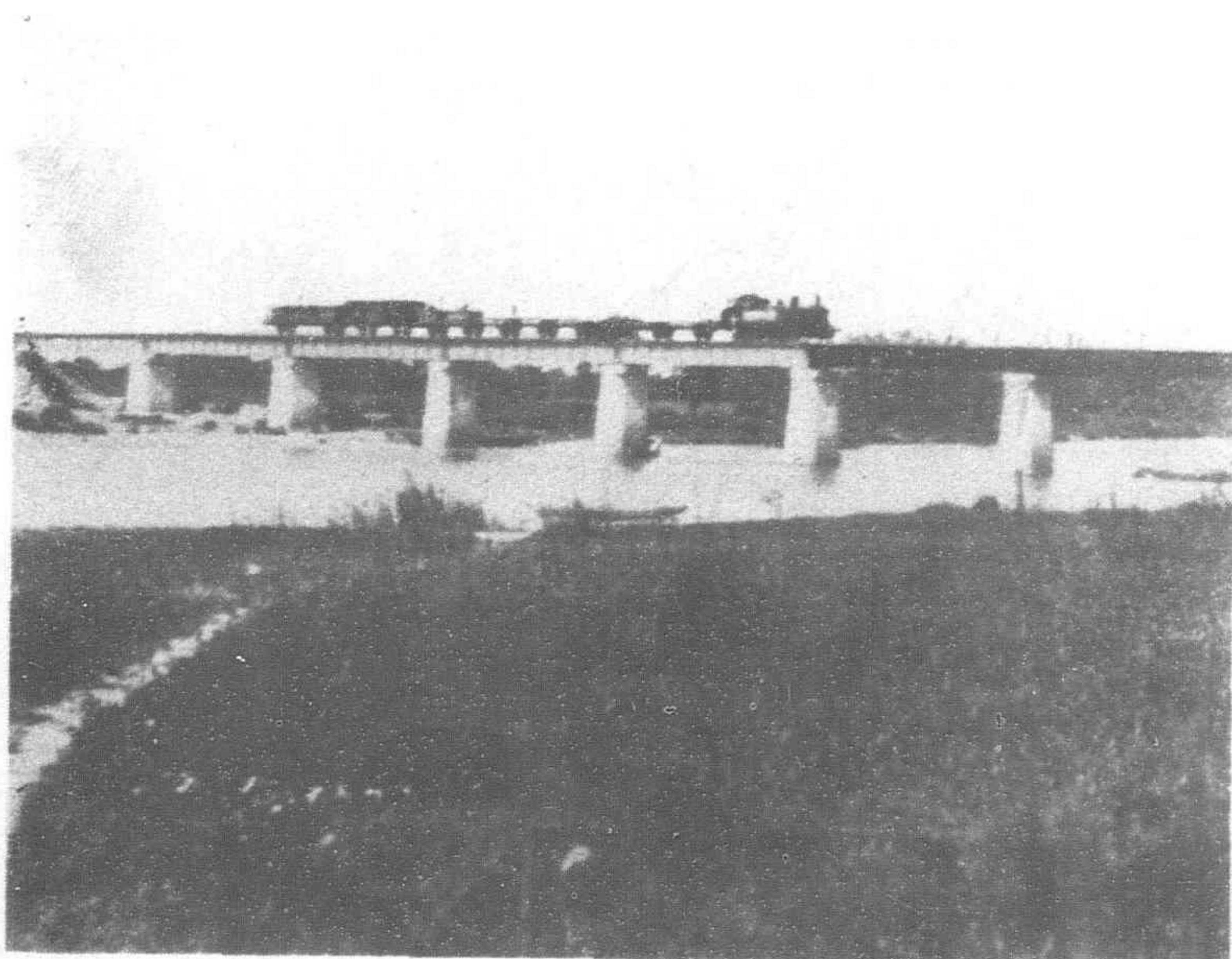


Photo by Courtesy the N.C.D.N.
Trial run of a train on the Teng Chia Kiang bridge

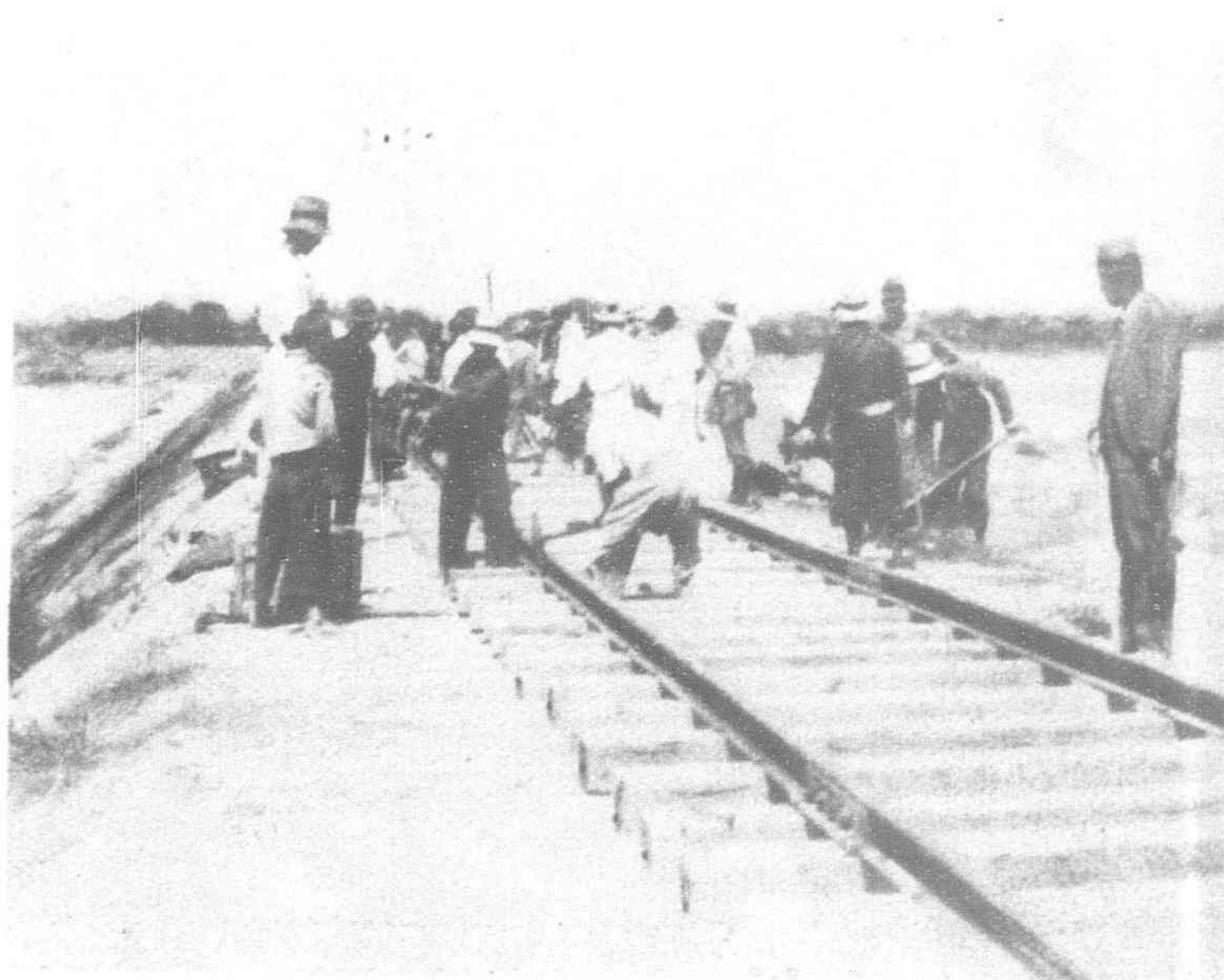


Photo by Courtesy the N.C.D.N.
Workmen engaged on construction of the new railway

Nanchang. This is one of the longest and largest bridges of its type in China and was built at a cost of between three and four million Chinese dollars.

Another important point to be known in connection with the recent achievement is that the provincial authorities of Chekiang and Kiangsi are now able to speedily suppress banditry and the spasmodic Communist uprisings by rapid movements of troops to the affected areas.

Considerable Achievement

The formal opening of the Nanchang-Yushan section took place on January 15 last, in the presence of Nanking and provincial authorities, Chinese and foreign newspapermen, and representatives from the various companies supplying materials to the line, the party numbering more than 300 persons. Nanchang, half way between Hangchow and Yushan, was the venue of the principal official ceremony which was marked by scenes of great enthusiasm.

Two hundred and ninety-two kilometers of railroad may, on first thought, be insignificant, but a few figures will destroy that impression. In all 514,000 ties were required, 22,200 metric tons of steel, seven main bridges were built—the largest 500 meters long, eighteen bridges 20 meters to 80 meters in length were built, and fifteen bridges under 20 meters were constructed. Numerous new station houses were constructed, including a South Station at Nanchang. Hundreds of cuts and fills, many through solid rock, were made and hundreds of tons of earth excavated. All this was done under Chinese supervision and with Chinese material, with the exception of steel rail equipment. When these items are realized, it can be seen that the opening of the line is no small achievement from the point of view of construction alone.

Heavy Toll of Lives

More than 2,000 persons lost their lives while engaged in the work, it has been revealed by Mr. Hou Chia-yuan, Deputy Director of the line and Deputy Engineer-in-Chief.

Malaria, believed to have been caused by drinking water taken from the rivers in the former bandit zone, claimed more than 1,000 lives. Banditry and flood caused the other casualties. For the construction of each kilometer of the railway, more than six persons lost their lives.

From beginning to end of construction of the line, hardship followed hardship. When survey on the line was started March 11, 1934, officials in charge of the work had to make it as brief as possible to avoid attacks by bandits. The surveyors started from Nanchang and returned after reaching Nanchang thirteen days later.



Photo by Courtesy the N.C.D.N.

View of the Liangchiatu bridge in course of construction

Proposals, however, were received from various sources that the line be routed north of the Singkiang (river) in order to help the districts devastated by communists. The proposed route was still molested by bandits and assistance of the air force was necessary. With the approval of General Chiang Kai-shek, chairman of the Military Affairs Commission, the survey over the new route was started.

Continued Harassments

During May and August the surveyors made repeated efforts to proceed with their work. Each time were they forced to return owing to banditry. In the middle of August, the Government forces scored major victories and the surveyors followed the pursuing troops to proceed with their work. Under the protection of armed forces, the surveyors succeeded in their work. In some of the sections, the officials had to be disguised as farmers to deceive the communist outposts.

Work on the line was started in November, 1934. The first months were marked by numerous surprise attacks from bandits, resulting in the killing and kidnapping of several workers. For a time the situation was so serious that many workers were impelled to quit their work. The presence of armed force considerably improved the condition.

Malaria Follows Banditry

In the Huanfeng district, however, malaria followed the banditry. A river near-by was the main source of water supply. Near the river was one of the former battlefields on which many thousands of communists and government soldiers had lost their lives and been given a "mass burial." Workers died one after another and the work was much handicapped until the disease was brought under control by medical officers of the railway.

When the work was completed late in December, 22,200 tons of rails had been used and 540,000 sleepers laid. There were a total of 85 bridges along the line, costing a total of \$3,026,921.98. The total cost of the railway was \$18,176,663.

Big Nanchang Workshop

A huge workshop will be built in Nanchang near the South Station. A site of 615 mou of land, about two kilometers from the station, has been chosen and a fifteen year plan laid down for the workshop. The units marked for construction within the first five years include a freight train repair shop of 60,000 square feet, passenger train repair shop of 18,000 feet, and other important factories.

The Yushan-Nanchang section of the Che-Kan Railway, as the Chekiang-Kiangsu



The Yih Ho San Bridge

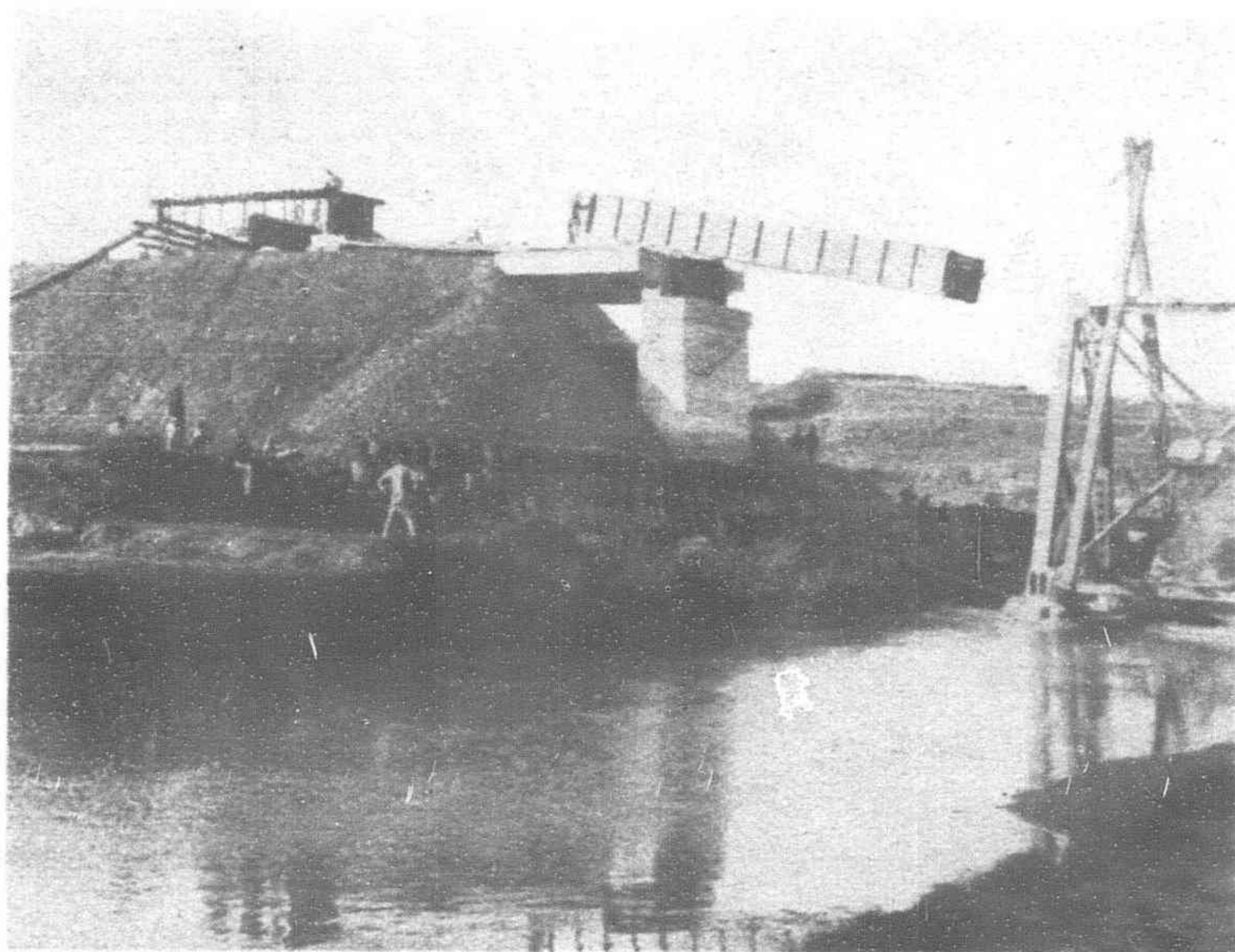


Photo by Courtesy the N.C.D.N.

Steel girder being laid in position on the Yih Ho San bridge

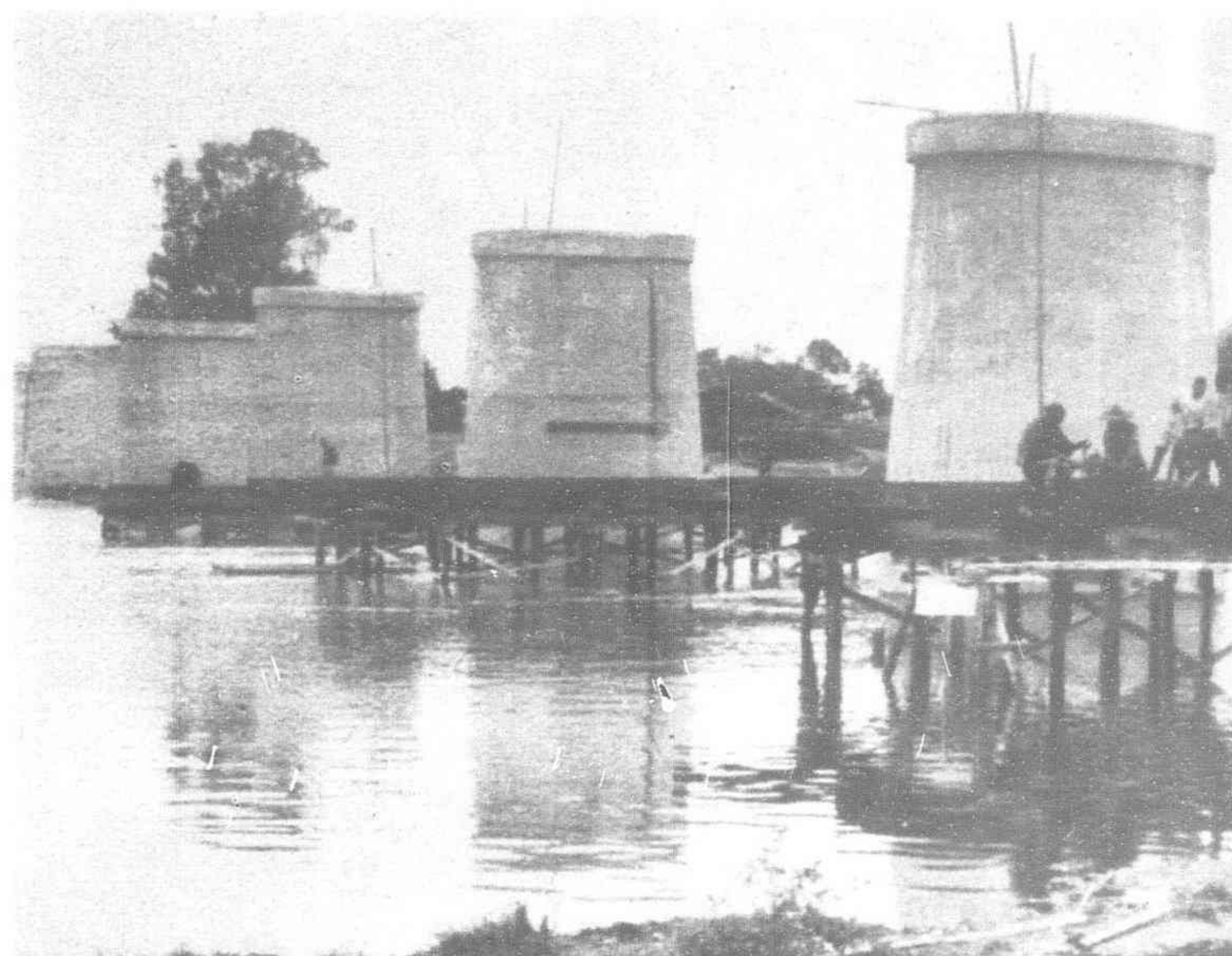


Photo by Courtesy the N.C.D.N.

Piers in place in course of construction of the Teng Chia Kiang Bridge

Railway is known in Chinese, is not expected to be a business success as far as passenger traffic is concerned, at least for the present. It passes a district where the population is extremely small. The devastation brought about by communists who occupied Central Kiangsi for a long time made railway travelling more than a luxury. If the people travel at all they use the cheaper boat and wheelbarrow service, if not proceeding afoot.

Freight Business Expected

Given proper guidance by the authorities along the line, the railway is expected to handle a considerable freight business. The area along the railway is definitely on its way to recovery and the export of agriculture, industrial and mineral products, encouraged by the Kiangsi provincial government, should find the line an excellent outlet.

The Hangchow-Yushan section already is growing rapidly. During the first six months of 1931, when the line was first opened to traffic to Iwu, 160,901 persons travelled on the line, paying \$115,834.32. In the following year, 818,661½ (the half, apparently meaning children paying half-fare) passengers used the railway, paying \$842,268.15. In 1933, there was another increase. 971,288 passengers travelled paying \$1,070,244.61.

Traffic Grows

The figures for 1934 were 1,046,337 and \$1,335,319.12. For the first ten months of 1935, 822,647 passengers travelled and paid \$1,222,261.12.

For freight traffic, the Hangchow-Yushan section received \$17,134.43 for handling 49,579 tons of goods in the first six months of 1931. In 1932, 285,464 tons of goods were handled, paying \$189,313.39. In 1933, freight totalled 163,552 tons and the revenue was \$324,003.25. For 1934, the tonnage was 313,932 and the revenue \$752,986.17. During the first ten months of 1935, 244,963 tons of goods were handled and the revenue was \$654,159.78.

Benefits Expected

Since the almost total eradication of the communist menace, the line should be an important factor in accelerating the economic progress of Eastern Kiangsi, in view of the enormous agricultural, industrial and mineral output of that part of the province. In fact, a number of benefits would almost immediately accrue to both Chekiang and Kiangsi provinces. Formerly, shipments of commodities from Kiangsi had to be made by rail to either Kiukiang or Wuhu, and thence by ship to Shanghai. It would now be possible to ship by rail direct to Hangchow and Shanghai, thus, saving a great deal of time, money and handling.

The damage done by communists has been heavy in the past. Figures released by the Kiangsi Provincial Kuomintang Head-

quarters allege the material damage in three districts of Huanfeng. Yiyang and Kweichu amounted to \$10,000,000 each and in Yushan \$5,000,000. In the seven districts of Yushan, Shangyao, Kwang-feng, Huanfeng, Yiyang, Kweichu and Tungshang, the total number of houses ruined was 26,450, material damage was \$37,632,500, and the number of persons killed was 64,600 while the number of refugees was 267,012.

Mines Opened

Figures available for the last year indicated a gradual but growing trend among the populace to return to their old homes and their old occupations. Agricultural produce has returned to the normalcy and industries resumed. Several mines are being opened.

Shangyao, the first chief station west of Yushan, is famous for its paper, tea, tea oil, tung oil, linen and pears. The other districts are famous for rice, ginger, sugar cane, sugar, peanuts, tea, mushroom and others. Many districts along the railway also are famous for the coal deposits and some of the mines are being worked by the railway authorities to obtain a sufficient supply of freight for the railway.

The railway authorities are encouraging the transportation of paper products from Kanshan and porcelain products from the famous Chingtencheng kilns. Business during 1934, in the porcelain wares amounted to \$2,222,200, and would have been larger if transportation had been better.

Tourists Expected

The railway is also expected to develop a tourist trade for many cities along the line, both in Chekiang and Kiangsi.

In the Kiangsi province, the most famous scenic spot is the "Shang Ching Kung"—palace of Chang Tien-shih, head of the Taoist religion. It is said that some of the buildings date back to the Han Dynasty and the Wei Dynasty. The Chang Tien-shih of the 63rd generation is now staying there with wife and concubine. The palace is situated near the Dragon-Tiger Mountain some twenty kilometers from the Yingtian Station along the line. It is advised, however, that travellers going to that famous spot shall approach the railway authorities in advance to make arrangements for buses and living accommodations. The Chekiang Tourist Bureau in Hangchow also makes these arrangements on application.

The Dragon-Tiger Mountain was once considered as sacred as Kofou, the birth and burial place of Confucius. There, during the Han Dynasty, Chang Tao-lin, on basis of the philosophy of Lao Tz, introduced the Taoism religion and proclaimed himself the "Teacher from Heaven." His descendants inherited the title and the 63rd descendant is now still virtually head of his religion.

(Continued on page 130)

British Equipment Ordered for Power Plant in Canton

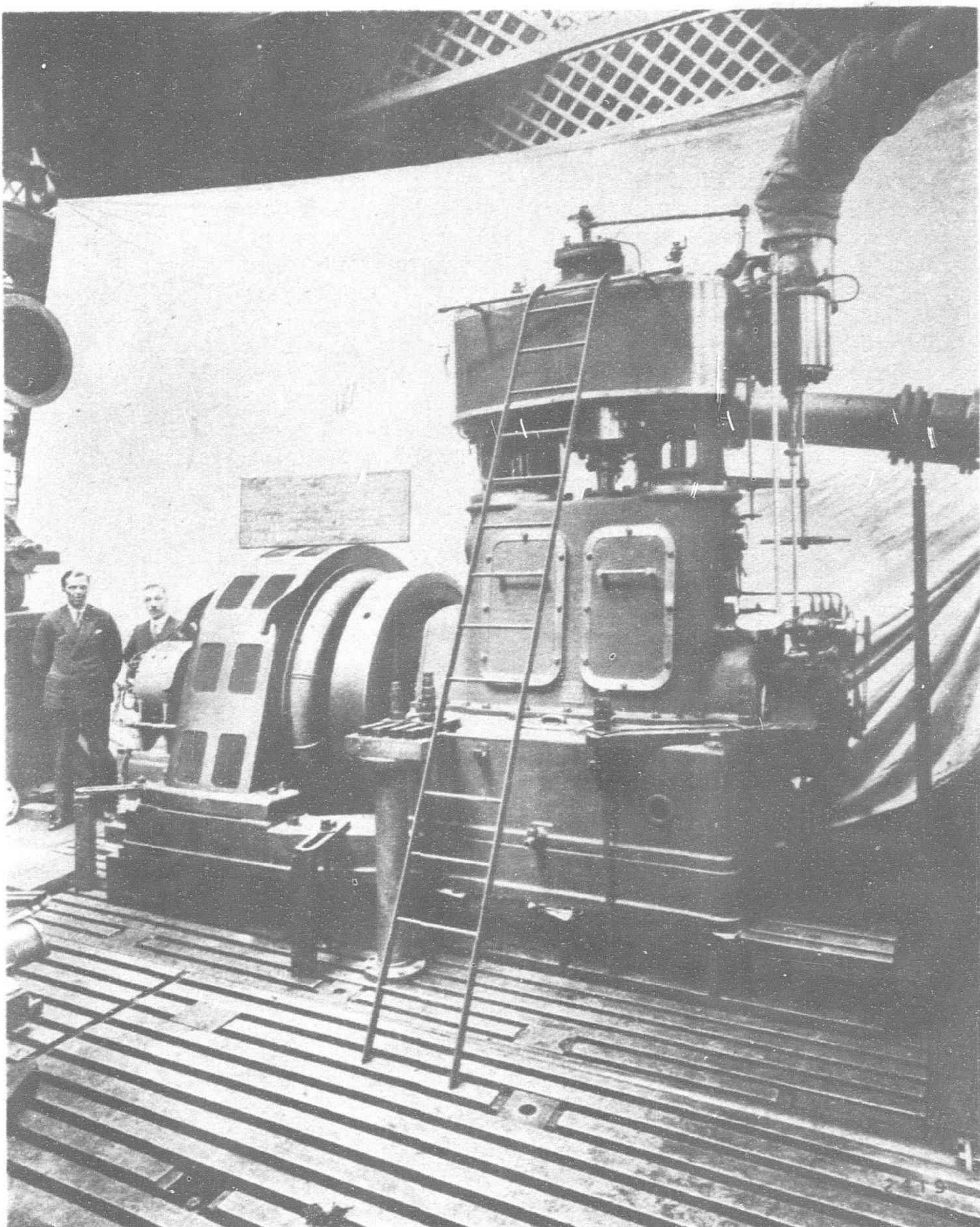
THE Chinese Government Purchasing Commission have recently placed on order in England for a power plant to be installed at the Railway Wharf, Wongsha, Canton, and the main equipment comprises two "Babcock & Wilcox" water tube boilers, operating at 150 lb. pressure with superheaters, mechanical stokers, feed water economisers, and other accessories, also two "Belliss and Morcom" high speed engines of 320 h.p. running at 428 revolutions per minute, each direct coupled to a "Laurence Scott" salient pole alternator, each of 220 kw. 0.8 power factor, 3,300-volts, 3-phase, 50-cycles.

These latter represent the latest scientific principles of alternator design, embodying the "Scott-Mossay" patent system of fabricated steel frame construction developed by Laurence Scott & Electromotors Ltd., Norwich, and included also in their "Emcol" totally enclosed motors with integral self-contained ventilating fans.

The steel frame alternators are supplied in standard sizes up to 1,250 kva. suitable for steam engine, Diesel engine, or geared steam turbine drive, through one massive bearing or for belt or rope driving in this case two or three bearings being provided. The main features include the steel frame construction, mica insulation, sleeve mounted exciters, and extra large bearings.

As regards the frame this is constructed throughout of steel having welded joints so designed as to prevent any possibility of distortion representing a great advance on the ordinary cast iron frame construction. For example a true stator bore and a uniform air gap is obtained since the frame never becomes deformed as already indicated, while the frame is both stronger and lighter.

The stator is made of stampings of special iron insulated, that is, painted with insulating paint to prevent eddy currents, and assembled under pressure, while the large diameter shaft is of high tensile steel with solid forged half coupling for bolting to the driving unit and an extension at the opposite end to carry the exciter armature. Also the magnet wheel is of rolled or cast steel carried on a heavy web plate bolted to a forged flange on the alternator shaft, while the poles are of laminated iron or cast steel and the stator windings mica insulated. Except in high tension machines the slots are of the semi-closed type with the coils impregnated before insertion.



Showing "Lawrence Scott" Generator direct coupled to high speed steam engine, one of two sets of 220 kw. each, supplied for Railway Wharf, Wongsha, through the Chinese Government Purchasing Commission

For high tension conditions, however, mica tubes are used in open slots.

The large bearings are of the pedestal type, split on the horizontal center line, and self lubricating with not less than two oil rings. Bedplates, provided as required are either cast iron or fabricated steel while in all cases unless otherwise specified, the rating is for a temperature rise not exceeding 40°C. after six hours on full load at the specified power factor, while the overload and other conditions comply with British Engineering Standards Association Specification No. 169.

BOXER INDEMNITY ADVANCES

The Board of Trustees for the administration of the British Boxer Indemnity Refund has approved a third advance of funds for the purchase of materials for the Hunan-Hupeh portion of the Canton-Hankow Railway. With regard to the application of the Ministry of Railways for \$500,000 for construction work on the Chuchow-Shiuchow section of the railway, it was decided that the sum be appropriated at the beginning of November.

The following matters were referred to various sub-committees for examination:—The request of the National Reconstruction Commission for a loan of £36,000 for the purchase of further equipment for the Nanking Electric Power Works; the request of the National Reconstruction Commission for a loan of £1,000 sterling in material and \$35,000 in cash for the purchase of equipment for

the electrical experimental station; the detailed plans, submitted by the Ministry of Industry, for the establishment of a newsprint factory at Wenchi, Chekiang, and the request of the Ministry for a loan for the establishment of the mill.

In connection with the proposed newsprint factory at Wenchi, Chekiang, Mr. Ssyutu Hsi said the total capital of the factory has been fixed at \$4,500,000, of which \$600,000 will be taken up by commercial shareholders. Of the Government shares of \$3,900,000, the Chekiang Provincial Government has signified its readiness to subscribe \$200,000, leaving a balance of \$3,700,000. It was proposed to apply for a loan from the British Boxer Indemnity Refund, or to order the machinery for the factory from Britain, with the Board of Trustees as guarantor.

The Mineral Industry of Japan*

IN a recent number of the *Annales des Mines* (13e ser., vii, 5, 1935) there appears an interesting article by A. Roux, in which a survey is given of the existing mineral resources of Japan and the developments that have taken place in recent years. From this we extract some notes relating to the production of coal.

Geological Structure.—The geological structure of Japan is very disturbed, the islands which comprise it forming the summits of the immense mountain system that flanks the western shore of the Pacific. According to Dr. Kanehara, director of the Geological Service, the surface is divided as follows:—Tertiary, 20.3 per cent; quaternary, 19.6 per cent; recent eruptive rocks, 17.6 per cent; palæozoic, 16.4 per cent; ancient eruptive rocks, 16.0 per cent; mesozoic, 10.1 per cent. The geological structure of Korea resembles that of North China, with a predominance of granite, gneiss, and recent eruptive rocks. Speaking generally, Japan is poor in minerals, only 4 per cent of the surface being known to be mineralized. Coal reserves are very limited and the iron deposits are of little importance.

Mining Legislation.—The Government is the owner of all mineral deposits, and they are exploited by means of Government concessions. Research permits are limited to two years, and working is only allowed when the existence of a deposit has been definitely proved. Perpetual concessions range in extent from a maximum of 300 acres to a minimum of 40 acres for coal and four acres for other substances. The State can participate in commercial development, or itself engage in production. The mining legislation is very liberal, and foreign capital is freely admitted so long as operations are conducted under Japanese law. For research concessions a tax of 0.30 yen per 1,000 tsubo (0.8 acre) is imposed, and for concessions to work, one of double that amount.

Production of Minerals.—The following table shows the value of the mineral production from 1927 to 1933:—

Year	Pro- duction	Exports	Imports	Excess of imports	Consump- tion
1927..	368.568	41.964	330.974	289.010	657.578
1928..	378.777	42.553	392.459	349.906	728.683
1929..	384.578	46.409	408.369	361.960	746.538
1930..	307.673	62.404	302.711	240.307	547.980
1931..	241.826	43.502	218.320	174.818	416.644
1932..	254.782	48.371	269.076	220.705	475.487
1933..	358.241	73.722	406.090	332.368	690.609

Japan herself furnishes about half, by value, of her consumption of mineral products. The following shows the production of various constituents of the Empire:—

		Value (millions of yen)	
		1913	1935
Japan proper	..	155	358
Chosen	..	8	48
Taiwan	..	4	16
Karafuto	..	—	5

The next table gives details of the production of coal and lignite in 1932:—

	Bituminous coal		Anthracite		Lignite	
	Amt. metric tons	Value 1,000 yen	Amt. metric tons	Value 1,000 yen	Amt. metric tons	Value 1,000 yen
Japan proper†	28,053,375	141,977	‡	‡	108,532	465
Chosen (Korea)	452,032	2,265	652,162	3,705	—	—
Taiwan (Formosa)	1,354,995	6,571	‡	‡	—	—
Karafuto (Saghalien)	677,389	5,200	‡	‡	—	—
Total	31,189,953	159,718	‡	‡	108,532	465

†Honshu, Shikoku, Kyushu, Hokkaido, and dependent islands.

‡Included in earlier columns.

Collectively the value represents 52.8 per cent of the total value of all mineral products.

In 1933 the total exports of mineral products amounted to 74 millions of yen, constituting only 4 per cent of the total exports of the country. Of the coal exported, 37 per cent (by value) went to Hong Kong, 31 per cent to China, 16 per cent to Malaya, and 11 per cent to the Philippines; the total value was 14.2 million

yen. The imports, valued at 36.7 million yen, went as to 66 per cent to Manchoukuo, 16 per cent to French Indo-China, 11 per cent to China, and 5 per cent to Asiatic Russia. The home consumption amounted to 32,523,750 tons, of which 94 per cent was furnished by the native collieries.

Character of the Coal.—According to the Geological Survey of Japan, the coals produced in Japan may be classed as follows:

Class	Characteristics
Anthracite	Short blue flame; 3 to 7 per cent volatile matter; fuel ratio, § above 12; non-coking.
Semi-anthracite	Short flame, very luminous and slightly smoky; 9 to 13 per cent volatile matter, ash-free; fuel ratio, 7 to 12; non-coking.
Semi-bituminous	Luminous short flame; 14 to 19 per cent volatile matter, ash-free; fuel ratio, 4 to 7; coking and non-coking.
Bituminous (upper)	27 to 35 per cent volatile matter, ash-free; fuel ratio, 1.8 to 4; generally coking.
Bituminous (lower)	37 to 52 per cent volatile matter, ash-free; fuel ratio, 1 to 1.8 per cent; coking and non-coking; humidity, above 6 per cent.
Lignite	Fuel ratio, below 1 per cent; non-coking; color, brown or black; humidity, above 6 per cent; cracks in drying.

§ The fuel ratio is the relation of the percentages
Fixed carbon

Humidity + volatile matter

The geological period extends from the Palæozoic to the Tertiary, the tertiary coal (bituminous, semi-bituminous and lignite) being by far the greatest; the chief deposits are found in Hokkaido and the north part of Kyushu.

The reserves are estimated to contain about 8,000 million tons, or adding those of Manchuria, about 9,250 million tons. The chief deposits in Kyushu are Chikuho, Miike and Kasuya in the province of Fukuoka, Karatsu, and Saga in the province of Saga, and Amakusa, Takashima and Hirado in the province of Nagasaki, which are mainly bituminous; in Hokkaido (bituminous); Joban (bituminous and anthracite) and Ube (bituminous) in Honshu; the Korean coals of Heijo (anthracite) and Kainei (tertiary lignite); and the lower bituminous coals of the North of Taiwan and Karafuto. The total production in 1932, was divided as follows: Japan proper; Hokkaido, 17.5 per cent; Joban, 6.1 per cent; Yamaguchi, 5.3 per cent; Kyushu, 59.9 per cent; other coal fields, 0.2 per cent; Taiwan, 4.1 per cent; Chosen, 3.7 per cent; Karafuto, 3.2 per cent.

The thickness of the seams does not exceed 9 m., the inclination ranging from the horizontal to the vertical. Certain of the workings in the province of Nagasaki extend below the sea, the annual output from such sources being three million tons. About a hundred mines each have an output of over 50,000 tons per annum, and five mines each raise over a million tons per year. The most important mine is the Miike mine at Fukuoka, worked by the Mitsui Mining Co., which in 1932 produced 1,883,500 tons, valued at 13.3 million yen and including 682,350 tons of calibrated sorts, 804,700 tons of small coals, and 396,450 tons of through and through; 7,800 workmen were employed. In 1933 the production rose to 2,248,000 tons, having a value of 18.9 million yen, with about 9,000 persons employed.

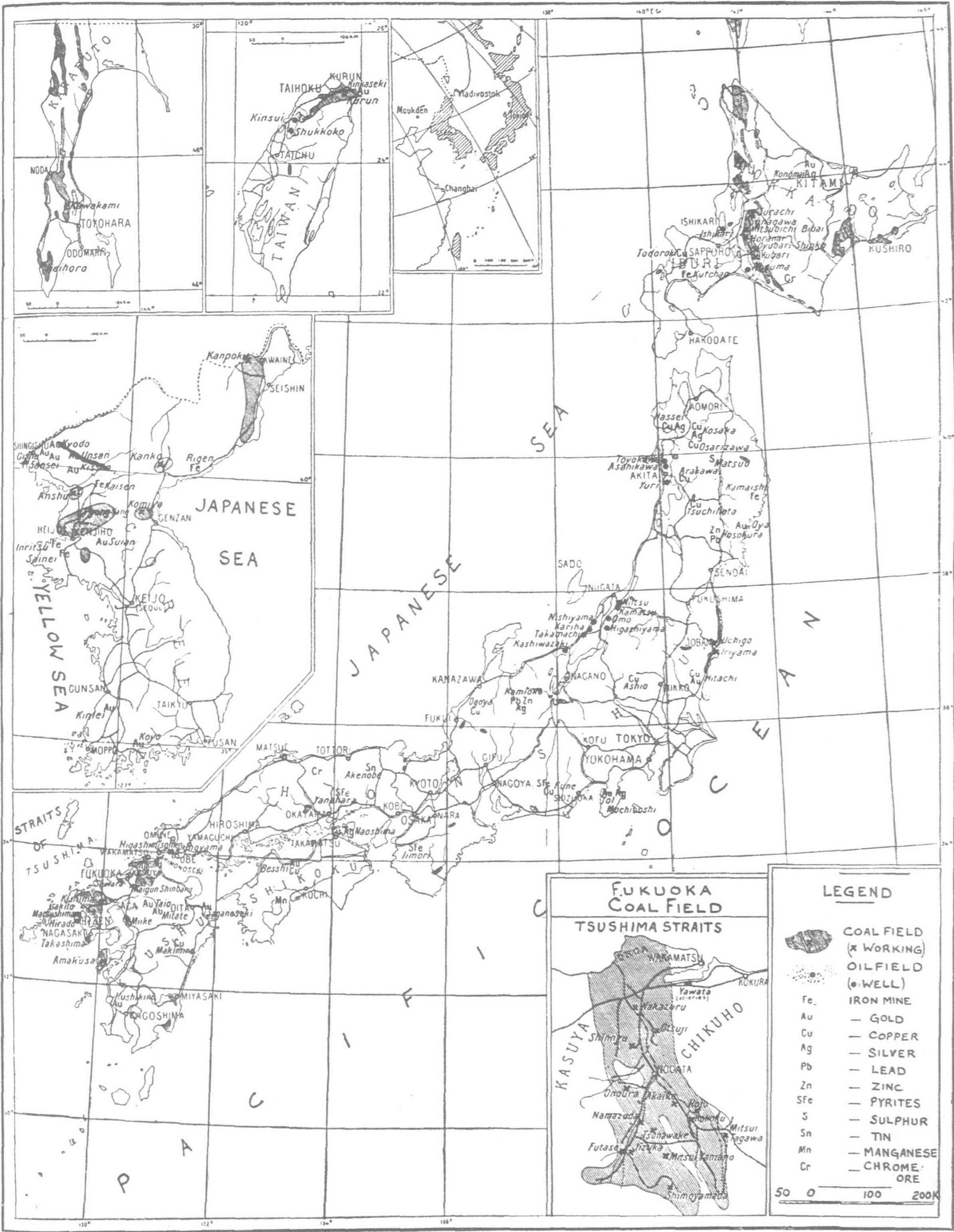
Table A shows the composition of the principal coals worked.

Table B shows the chief collieries, with the output in 1933 and the number of persons employed.

The depth of the various undertakings is given below:—

Coal fields	Percentage of workings. Depth in metres				
	Below 150	150-300	300-450	450-600	600-750
Hokkaido	64	31	5	—	—
Joban	34	40	26	—	—
Nagato	100	—	—	—	—
Fukuoka (Chikuho, Miike, etc.)	36	44	15	4	1
Hizen	58	28	8	6	—
Other basins	65	18	17	—	—

*The Colliery Guardian.



Map showing the Mineralized Areas in Japan

TABLE A

Age	Deposit	Quality	Moisture	Volatile matter	Fixed carbon	Ash	Sulphur	Calorific value
			Per cent	Per cent	Per cent	Per cent	Per cent	
Upper Trias ..	Omine (Nagato) ..	Semi-anthracite	3.0	8.7	68.7	19.5	0.62	6,000
Eocene	Naibuchi (Karafuto) ..	Lower bituminous	5.1	43.3	40.8	10.7	0.33	6,200
"	Bibai (Ishikari) ..	"	3.2	39.5	47.9	9.4	0.38	7,000
"	Horonai (Ishikari) ..	"	4.6	41.6	49.1	4.6	0.49	6,700
"	Yubari (Ishikari) ..	"	2.3	41.2	50.4	6.1	0.44	7,400
Miocene	Kushiro (Kushiro) ..	"	7.5	39.6	45.3	7.6	0.35	6,000
"	Joban (Iwahi) ..	Lignite	10.8	41.8	36.0	11.4	1.58	5,500
Eocene	Onga (Chikusen) ..	Lower bituminous	2.4	41.0	47.8	8.8	0.94	7,000
"	Fukuoka (Chikusen) ..	"	3.0	42.0	47.3	7.7	1.07	7,100
"	Miike (Chikuho) ..	"	0.7	40.1	48.1	11.2	3.61	—
"	Karatsu (Hizen) ..	"	3.4	42.2	45.4	9.0	2.08	6,900
"	Takashima (Hizen) ..	"	1.2	38.3	52.4	8.0	0.67	7,100
"	Amakusa (Chikuho) ..	Semi-bituminous	2.6	11.7	78.9	6.8	1.60	6,800
Miocene	Kiurun (Formosa) ..	Lower bituminous	4.3	38.1	54.3	3.3	4.16	6,900
Permo-carboniferous	Heijo (Korea) ..	Anthracite	3.0	5.0	83.0	9.0	0.4	7,000

TABLE B

Inspection district	Mines		Owners	Production		Number employed
	Name	Situation		Quantity	Value	
				Metric tons	Yen	
Sapporo	Yubari ..	Ishikari	Hokkaido Coal and Steamship Co. ..	1,074,987	6,733,203	2,719
	Mitsubishi-Bibai ..	"	Mitsubishi Mining Co. ..	842,853	5,308,364	1,599
	Sunagawa ..	"	Mitsui Mining Co. ..	710,719	3,776,572	1,491
	Oyubari-Shinko ..	"	Mitsubishi Mining Co. ..	382,402	2,390,528	822
	Shin-Yubari ..	"	Hokkaido Coal and Steamship Co. ..	282,779	1,733,370	707
	Horonai ..	"	" ..	372,206	2,317,114	882
	Sorachi ..	"	" ..	365,489	1,520,099	790
	Mojiri ..	"	Mojiri Coal and Steamship Co. ..	279,323	1,200,565	962
Sendai	Mitsui-Bibai ..	"	Mitsui Mining Co. ..	297,230	1,545,730	642
	Uchigo ..	Fukushima	Iwaki Coal Mining Co. ..	786,930	4,335,888	3,116
	Iriyama ..	"	Iriyama Coal Mining Co. ..	400,900	2,610,925	1,479
Fukuoka	Okinoyama ..	Yamaguchi	Okinoyama Coal Mining Co. ..	1,016,526	6,069,009	3,642
	Higashimisome ..	"	Kansaka Fujimoto ..	566,713	3,268,631	3,310
	Miike ..	Fukuoka	Mitsui Mining Co. ..	2,247,727	18,952,786	8,986
	Sawara ..	"	Sawara Coal Mining Co. ..	282,636	1,735,690	2,223
	Namazuda ..	"	Mitsubishi Mining Co. ..	704,380	4,509,834	2,056
	Kaigun Shinbaru ..	"	Navy Department ..	494,093	2,654,948	2,636
	Nakazuru ..	"	Taisho Mining Co. ..	525,894	3,167,301	1,830
	Otsuji ..	"	Kaijima Coal Mining Co. ..	336,570	1,889,692	1,257
	Onoura ..	"	" ..	1,133,324	7,007,016	4,544
	Shinnyu ..	"	Mitsubishi Mining Co. ..	406,870	2,522,536	1,309
	Futase ..	"	Department of Commerce and Industry ..	930,992	6,009,013	5,069
	Mitsui-Yamano ..	"	Mitsui Mining Co. ..	542,346	3,337,406	2,052
	Iizuka ..	"	Iizuka Mining Co. ..	487,000	3,168,559	1,273
	Tadakuma ..	"	Sumitomo Coal Mining Co. ..	363,669	2,340,976	1,623
	Shimoyamada ..	"	Furukawa Mining Co. ..	292,565	1,718,548	1,119
	Tsunawake ..	"	Aso Shoten Co. ..	373,410	2,006,052	1,569
	Mitsui-Tagawa ..	"	Mitsui Mining Co. ..	1,109,747	8,043,268	3,689
	Hokuku ..	"	Meiji Mining Co. ..	513,979	3,661,624	1,488
	Akaike ..	"	" ..	375,170	2,450,865	1,397
	Hojo ..	"	Mitsubishi Mining Co. ..	298,222	2,348,186	999
Saga	Kishima ..	Saga	Kishima Coal Mining Co. ..	529,984	3,988,201	3,076
	Sakito ..	Nagasaki	Kyushu Coal and Steamship Co. ..	734,800	4,351,571	2,257
	Takashima ..	"	Mitsubishi Mining Co. ..	468,610	4,328,673	1,789
	Matsushima ..	"	Matsushima Coal Mining Co. ..	325,215	1,977,355	1,547

Japan's fuel reserves being so exiguous, she has pursued an energetic policy of prospection, both for coal and for oil, in her dependencies and in the countries within her sphere of influence. The Fushun enterprise in Manchuria constitutes an important asset, although the coal does not give a high yield of coke or a coke of good quality, and Japan requires two million tons of coking coal per year to satisfy the needs of her iron and steel industry. The mines in Taiwan and Karafuto have been developed with great speed, but their future appears to be limited. The chief hopes are founded upon Korea, which possesses valuable deposits of coal, and the Heijo basin—where the reserves are valued at 200 millions of tons—contains an excellent anthracite. In the North of Korea are to be found two important lignite fields, belonging probably to the pleistocene age, with an estimated tonnage of 320 million tons, which it has been proposed to treat by low-temperature carbonization. Under the stimulus of encouragement by the Japanese Government, the output of the Pyong-Yang Colliery, in the Heijo basin has risen from 360,000 tons in 1925 to 800,000 tons in 1933.

The bituminous coal deposits of Korea have been developed with the same activity, and this has coincided with a growth in the local consumption and the export trade with Japan, the latter rising from an average of 120,000 tons in the period 1914-24 to over 500,000 tons in 1933, chiefly at the expense of Indo-Chinese coal. M. Roux, impressed by the threat from this source, advocates the creation of a consortium between the Indo-Chinese and Korean collieries with a view to safeguarding interests in the Japanese market.

The mines are generally fiery and explosions are frequent. They are equipped with powerful fans (the most powerful having a capacity of 12,000 cu. m. per min.) and rescue stations are provided on a large scale; there is an experimental gallery of 30 m. at Nogota (Fukuoka). Pumping is heavy, and the average at the different collieries ranges from 3.4 to 18 cu. m. per ton of coal worked. The general average is 7.8 cu. m. and the maximum 46.2 cu. m. (in the Joban collieries).

(Continued on page 130)

Japanese Machinery Trade

DURING a period of world depression Japanese production has shown a remarkable increase, export trade has flourished, and prices have remained fairly steady, while Japan has in some measure escaped the evils of industrial unemployment, from which other countries are suffering.

The growth of industrial activity, however, has been somewhat uneven, and has benefited only limited sections of the population, notably those connected with the leading export industries, and the industries supplying military and naval requirements. Meanwhile, although there is no abnormal unemployment in industry, there is still distress in many agricultural areas.

According to a recent report on economic conditions in Japan, the development of the machinery and machine tool manufacturing industry has been greatly stimulated by the demand for naval and military equipment and supplies. The army re-organization program, for example, involves renovation and increase of aircraft, tanks, artillery and munitions. The industry has been stimulated also by the increase in manufacturing and by the development of communications and building activity in Manchuria.

Capital investment in the industry, if account be taken only of the principal machinery and tool manufacturing establishments, has increased from 198 million yen at the beginning of 1933 to 227½ million yen in 1934. Exports of machinery and parts thereof, valued at only eleven million yen in 1932, increased in value to 26 million yen in 1933, and to nearly 58 million yen in 1934. The greater part of this increase is accounted for by exports to Manchuria.

Exports to China, amounting to 9½ million yen in 1934, also increased, and there is a small export to India and to Asiatic Russia. The types of machinery now exported from Japan include steam boilers, locomotives, electrical machinery, pumps, metal and wood-working machinery, and printing machinery, and there is an export also of scientific apparatus, instruments of precision, telephone apparatus, clocks, etc.

The increasing ability of Japan to supply her own machinery requirements resulted in a progressive decrease of machinery imports from 1929 to 1932; but so great has been the demand for machinery in Japan and in Manchuria in the last two years that imports have again increased as follows:—

	Value in yen
1932	60,572,902
1933	72,657,971
1934	98,022,254

Foremost Imports

The types of machinery and machine tools most largely imported include:—

	Import Values in 1,000 yen	
	1933	1934
Steam boilers and parts and accessories thereof..	1,791	4,091
<i>Internal-combustion engines:—</i>		
Under 250 kilos	1,826	3,253
Under 2,500 kilos	13,955	17,277
Other	366	248

Dynamos and electric motors:—

Under 100 kilos	1,373	829
Under 5,000 kilos	192	146
Other	170	248
Gas compressors	669	1,742
Pumps	726	1,000
Pneumatic tools and machines	256	439

Metal and wood-working machines:—

Under 100 kilos	228	301
Under 5,000 kilos	11,726	12,007
Other	4,293	9,125
Spinning machinery	3,520	6,395
Knitting machines	82	1,773
Milling cutters, gear cutters, etc.	267	334
Steam turbines	59	430
Fuel economizers	124	393
Meters (ampere, volt, watt, etc.)	1,704	1,607
Ball bearings	567	676
Cylinders for compressed gases	342	1,539
Chains for cycles, etc.	444	461
Cocks and valves	606	684

In general, it may be said of the Japanese engineering industry that it is able to supply all normal requirements, and that it looks abroad only for designs and manufacturing licences, and for occasional supplies of machines of a specialized or advanced type.

Tinplate

Production of tinplate in Japan has, until recently, been confined to the Government steel works at Yawata, where, as stated in the account of the iron and steel industry, production is now (December, 1934) at the rate of 6,000 tons (metric) per month. It has been gradually increased from about 3,000 tons per month in 1932. Equipment at Yawata is being further extended, and it is expected that in the near future production will be in the neighborhood of 7,000 to 8,000 tons per month.

A new tinplate manufacturing company, the Fuso Kogyo Kabushiki Kaisha, began production in 1934, and up to May of that year had produced 1,700 metric tons. Since May, 1934, the production of this company has averaged 608 tons per month, while the company's production capacity is understood to be at least 1,000 tons per month.

Another new tinplate manufacturing company, the Toyo Kohan Kabushiki Kaisha, has been formed as a subsidiary of the Far East Can Manufacturing Co. Machinery, of which approximately 75 per cent has been imported from the U.S.A.—the remainder having been supplied by Japanese manufacturers—is now being installed, to give a production capacity of about 4,000 tons per month, and it is expected that production at this rate can be attained by the end of 1935.

On a conservative estimate, therefore, the production of tinplate in Japan will be in the neighborhood of 127,000 tons per annum in 1936, or, if all the equipment mentioned above be employed to full capacity, 156,000 tons per annum.—*Machinery Market.*

HANKOW-CHUNGKING RAILWAY

If financial stringency was one of the reasons that accounted for the delay of the construction of the Chungking-Hankow Railway, the Gorges form another formidable difficulty which is almost insurmountable. In view of this, the Ministry of Railways, on being asked by General Chiang Kai-shek to resume construction of the railway, has decided to abandon the original railway bed and to start surveying a new line which most probably will pass through Kweichow and Hunan, then to Hankow, so as to avoid the Gorges.

Parties of surveyors from the Kiao-Tsi and Ping-Han Railways have already reached their designated places awaiting orders to

commence the survey. Those from the Shantung peninsular railway will meet the Ping-Han party at Tungjen on the Hunan-Kweichow border. The line projected is to pass Nanchuen, Pengshui, Chingkiang, Kungtan and Yuyang and crossing the Wu Kiang to head for Szenan and then Tungjen on the Kweichow border.

In order to build the railway as modern as possible General Chiang Kai-shek proposed that foreign railway experts and engineers be employed. The cost estimated by the Ministry of Railway reaches the sum of \$400,000,000 which, it is learnt from Chinese sources, will be raised by a loan from Chinese and foreign banks.

Japanese Cutlery

JAPAN'S manufacturers of cutlery in an industrial sense are of distinguished lineage, for the modern makers of knives and forks and spoons trace their beginnings back directly to the ancient famous swordmakers of Nippon, and the flourishing state of this industry to day and the extent of the trade throughout the world indicate that quality has been

modern homes—all of these carry the widely known device "Made in Japan."

Japanese Cutlery Increasing Demand in Overseas Markets

From time immemorial, Japanese have known the art of making swords, producing not a few renowned swordsmiths when samurai-dom was in flower, and it is but natural that Japanese should excel in the production of cutlery.

The prefectures of Kanagawa, Okayama, Gifu, Kyoto, and Nara were formerly among the high class sword production centers in the country, but after the Meiji restoration the use of swords by the samurai class was prohibited.

Finding it difficult to eke out their existence, many samurai parted with their swords of excellent workmanship, which had come down from their forefathers, while the swordsmiths were compelled to turn to the production of kitchen knives and the like, which were in popular demand and which required but little skill.

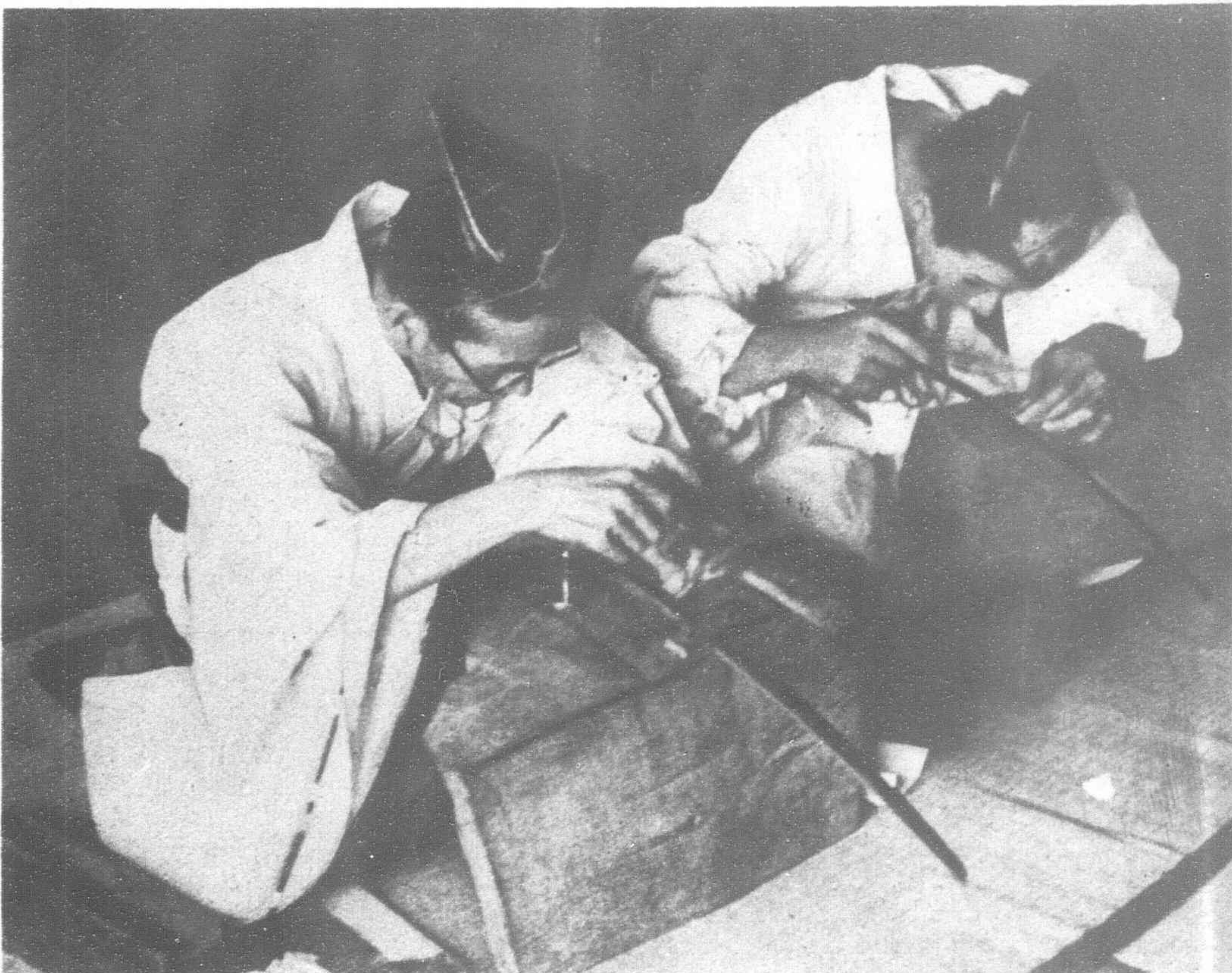
Some sword production centers ceased to exist, but others have survived as the producers of various kinds of hardware. The latter places include Sanjo in Niigata prefecture, Seki in Gifu, Miki in Hyogo prefecture, and Sakai, near Osaka. Unlike other sword production centers, Sakai's activity was on a multilateral basis.



Sharpening razor blades on power driven leather grinders

maintained in keeping with all the traditions of craftsmanship that old swordmakers held. It follows that the hatchets with which natives hew paths through tropical jungles in the Philippines, in South America and in Africa, the "parangs" of the inhabitants of the Malay archipelago, the hatchets of more highly civilized centers and the knives, the forks and the spoons in use in many

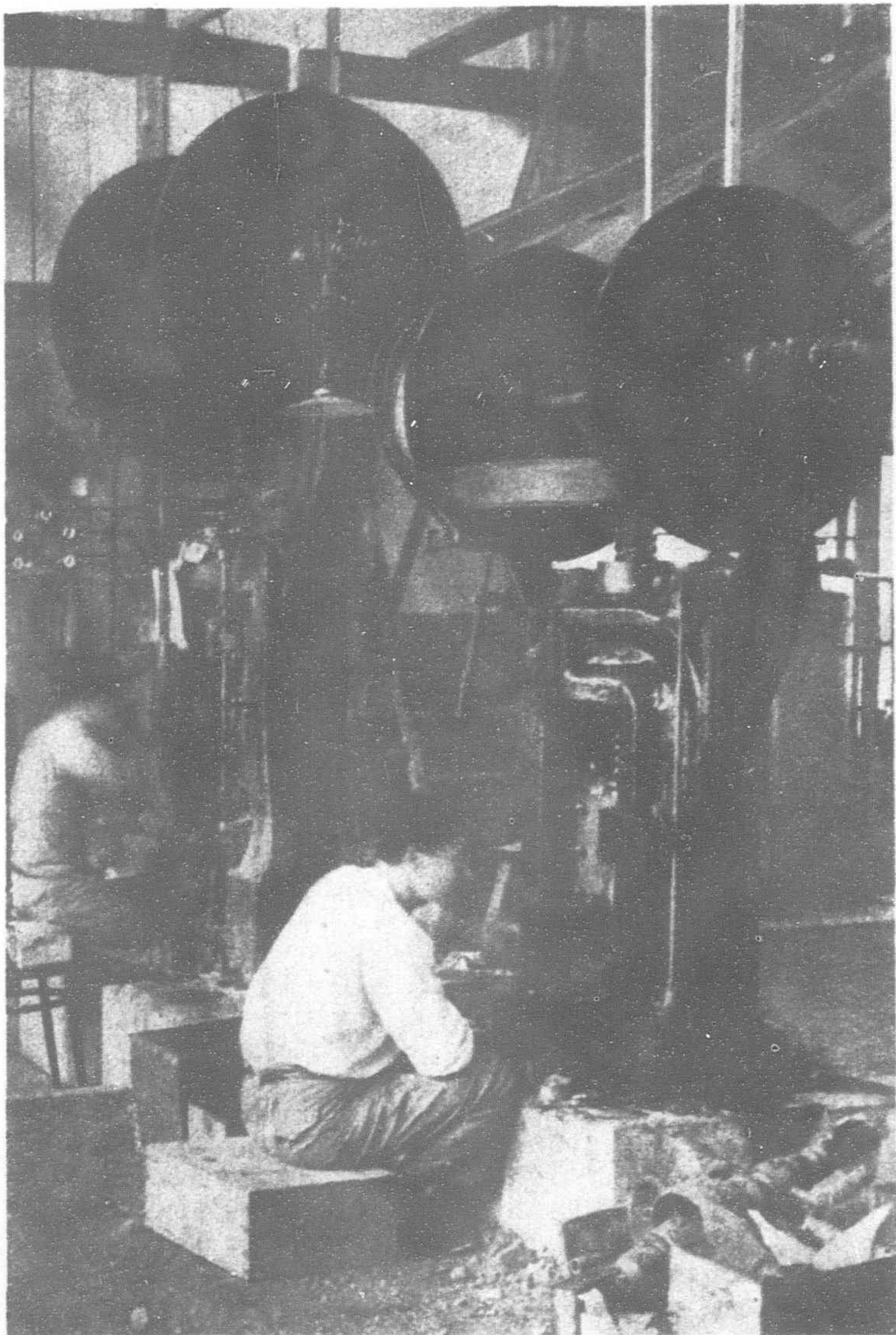
A SMALL town in central Japan named Sekimachi, which was known in feudal days as a center of the sword-making industry, is now registering remarkable progress in the manufacture of cutlery, its products being exported in large quantities to the South Pacific Islands, Africa and even to the United States. The town has a population of about 12,000 of which 2,500 are engaged in the new industry, and produces Y.3,000,000 worth of cutlery per annum. Despite this modern development, however, a few swordsmiths still hold on to the profession which has been handed down to them by their fathers.



A noted swordsmith of Sekimachi and his son, dressed in the ancient ceremonial dress of their profession, engraving their signatures on new sword blades they have just finished

During the period of Toyotomi, some 300 years ago, Matasaburo Hashiya, a merchant of Sakai, commenced manufacturing rifles. Soon there was a rush for these new implements of war and it was not long before other swordsmiths in Sakai began making them.

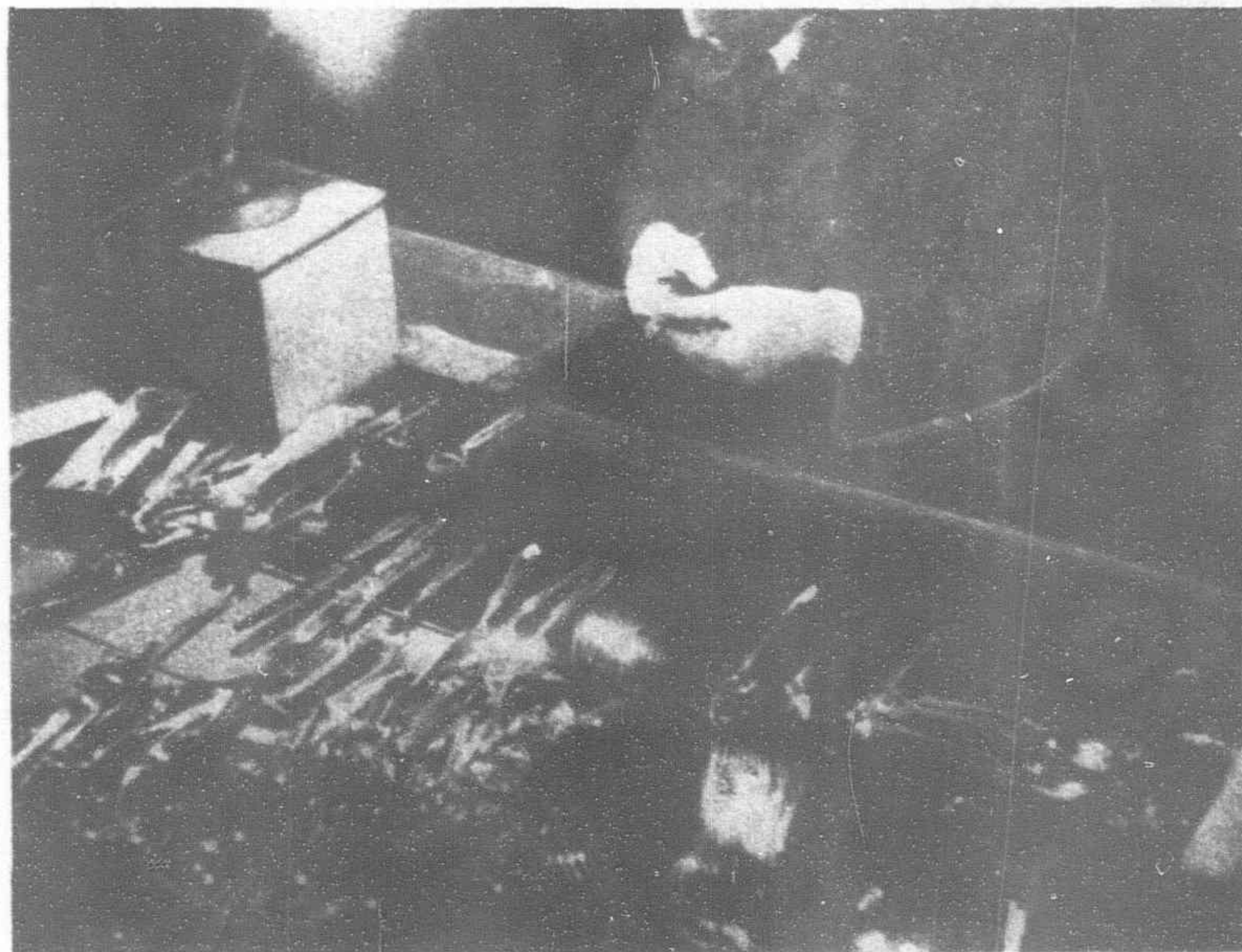
The Seki cutlery company in Seki, Gifu prefecture, specializes in the production of high class table knives, forks, various kinds of pocket knives, and other cutlery products. Sanjo, in Niigata, leads in the manufacture of spoons, forks, and other tableware, as



Making pocket-knives at one of the Seki-machi cutlery works



Carving knives are tempered by primitive methods



Views of workers in a Seki-machi plant. Top, women workers producing safety razor blades; center, other workers putting handles on pocket-knife blades; bottom, an overseer examining finished table cutlery of stainless steel

well as small knives. Sakai and Miki are noted for knives and scissors.

Of course, such things are not the only output of these places. Their products also include scythes, kettles, locks, keys, and what not. Some of latest productions include knives for cutting water-melons, those for cutting bread, and those for cutting rice cakes.

* * *

In 1930, Japan exported more than Y.2,000,000 worth of cutlery and although in the following two years, the amount showed a decline, it began rising rapidly in the year 1933. In 1934 the city of Sakai alone exported some Y.1,000,000 worth of steel products abroad.

These Japanese steel goods mainly found their way to Near East, South America, the Dutch East Indies, China, and Manchoukuo.

* * *

As for the improvement of the quality, the national cutlery industry lately began putting renewed energy into its researches. In the production centers of Seki, Sanjo, and Miki, there are cutlery experiment stations.

A similar organ was also established in Sakai in April of this year, Akira Kishimoto, an expert and a student of Dr. Kotaro



A roller press used in making table knives. It is one of the three presses of this kind now in operation in Japan

Honda, an authority on steel products, being invited to take charge of it.

The organ, which is called, the Metallic Industry Laboratory, is now being utilized by the cutlerymakers of the city. During July, this year, the laboratory handled no fewer than 161 cases, including:—

Twenty-four inquiries; 32 analytical examinations, 19 microscopic tests; four microscopic photographs; 14 examinations pertaining to hardness; and 10 qualification examinations, involving 1,168 cutlery products.

The goods passed by the laboratory are sold with marks attached indicating that they come up to the Osaka prefectural standard. At present, the examination by the laboratory is not obligatory and so there are not a few uncertified products on sale.

Those who consult the laboratory are increasing month after month, however. It is said that on busy days, the staff of the laboratory is insufficient to conduct examinations.

* * *

Compared with other industrial activities of the country, the cutlery production enterprise, despite its ancient origin, long failed to show rapid progress. However, the rise of the industry is now conspicuous.

The Mineral Industry of Japan

(Continued from page 126)

Labor Conditions.—Since 1930 the daily shift underground has been limited to ten hours, and it is provided that all women and young persons shall have a rest period of at least half an hour. Four holidays per month are compulsory for all workers in coal mines. The employment of women and young persons on the night shift has been abolished since 1933. From 1932 onwards working miners have been entitled to compensation for sickness or accident arising from their work. The regulations provide in great detail for the prevention of accidents, and are almost as exacting as those in force in European mines.

Generally, Japan may be said to have observed the international conventions, and that she has gone beyond them in regard to the protection of female and juvenile labor in mines; since September, 1933, the Japanese Legislature has forbidden the employment below ground of women and youths less than 16 years of age, with exemptions, however, in the case of certain mines.

Inspection is carried out by means of a central office, which deals with social matters, and local offices; the former comprises nine general inspectors, six technical inspectors, and four health inspectors, and the latter 137 general inspectors and 196 technical and health inspectors, making a grand total of 352.

In 1932 there were 121,353 men and 16,622 females employed in coal mines, of whom 92,404 men and 7,202 females were engaged in work below ground; altogether 34.9 million man-shifts were worked, of which 23.9 were below ground. The total number of miners has dropped progressively from 258,000 in 1930 to 185,840 in 1932; of that total, 137,975 were employed in coal mines. The average output of coal per man-shift has risen from 0.802 metric ton in 1932 to 0.858 metric ton in 1933. The fall in wages has continued unchecked since 1929, and the wages of miners are generally lower than those paid to factory workers. The average wage of coal miners (males) in 1932 was 1,400 yen, whilst the women received an average of 770 yen.

In 1932, 44.07 persons were killed by accidents in and about coal mines per 10,000 employed.

The total capital invested in Japanese mines amounts at the present time to about one milliard yen.

Developments During 1935

(Continued from page 119)

new B.T.H. low intensity lantern. The latter is of the mirror arc pattern, in which the light system makes use of a mirror having two fixed focal points, the arc crater, and the picture gate. The equipment is designed to operate at current values between 20 and 50 amperes and 60 to 100-volts D.C. It is suitable for throws up to 100 feet.

A high intensity arc lantern of the same type has also been developed, and with the normal current consumption of 50/75 amperes, the screen illumination compares very favorably with that of other types consuming up to 140 amperes.

A new spot and slide projector which combines in one unit a highly efficient projector and attachments for slide projection, spotlighting, floodlighting, and for color mixing and color wheel work, has been introduced. The lantern is designed to operate between 20 and 50 amperes at 60/100 line volts.

Two further models of hot cathode rectifiers for cinema arc supply have been constructed. Continued loud-speaker development has resulted in a greatly improved speaker arrangement for cinema use.

The Yushan-Nanchang Railway

(Continued from page 122)

His latest efforts to make the title an official rank—citing the precedent in the case of Confucian descendants—failed.

Many Scenic Spots

There are also a number of other scenic spots along the Yushan-Nanchang line. The comparatively poor facilities for travellers make these spots not worth the trip under hardships.

Excellent facilities, however, are now available for excursion trips to scenic spots along the Hangchow-Yushan section of the railway. In Kinwha, for instance, is the famous Peishan, the Northern Mountain. There are two beautiful underground caves. In Chuki districts are five fountains which should be worth an excursion trip.

The Water Supply of Ragama*

By S. MAHADEVA, ASSOC.M.INST.C.E., A.M.INST.W.E., F.I.S.E., M.R.SAN.I. (District Engineer, P.W.D.)

A YEAR or so before the Prince of Wales laid the foundation stone of the Colombo Breakwater in 1875, a temporary jail was started at Mahara by the side of a quarry from which was to be hewn the stone required for the construction of the breakwater. A quarter of a century later, the necessity for quarantine arrangements in connection with the control of immigrant Indian labor led to the construction of a camp which was then called a "Cooly Camp." The site was within easy access of Colombo and alongside the Railway route a few chains away from Ragama Station. Thus originated the institutions which have since expanded considerably and now comprise the units served by the Ragama Waterworks.

Ragama is sometimes, incorrectly, called Mahara. The two names are associated with different aspects of life. To some it is known as a healthy locality not far from Kandana famed for its dry air; for patients afflicted with diseases of the lungs it suggests a haven of refuge; to others it is known by the less popular name of Mahara where iron bars and high walls enclose the delinquents whose labor provided, as long ago as 1875, the granite blocks for the south-west arm of the breakwater, that gigantic task in which thousands of tons of rock and concrete were used. Since then stones from Mahara have contributed to the construction of all major works of the Public Works Department, Harbor, Railway and other Engineering departments.

The name, therefore, is associated with activities of health and labor, where sites have been founded for a Prison, an Immigration Camp with a separate Cholera Hospital and an Anti-Tuberculosis Hospital. On two occasions, too, part of the Ragama Camp housed the prisoners of war of two nationalities; the Boers from 1900 to 1902, and the Germans in the latter half of 1914.

The Immigration Camp once passed thousands of laborers for the plantations. The camp did functions of paramount importance in safeguarding the health of the Island. Its activities are no more. The buildings which are of camp pattern remain as an emergency camp. Their functions enveloped greater functions of health and to-day the responsibility is shifted from Ragama to outside the

shores of Ceylon. As prevention is better than cure the barrier was instituted on the shores whence labor was recruited. The Camp is now at Mandapam, South India; but that is another story.

To Engineers Mahara and Ragama are both familiar. Mahara for its prison and the most arduous labor within its precincts which turn out anything "hard" from coconut husks to granite chips.

To the Public Works Department, Ragama is familiar as the quarries that supplied stones for the Lake Development Scheme and road metal even as far as distant Chilaw.

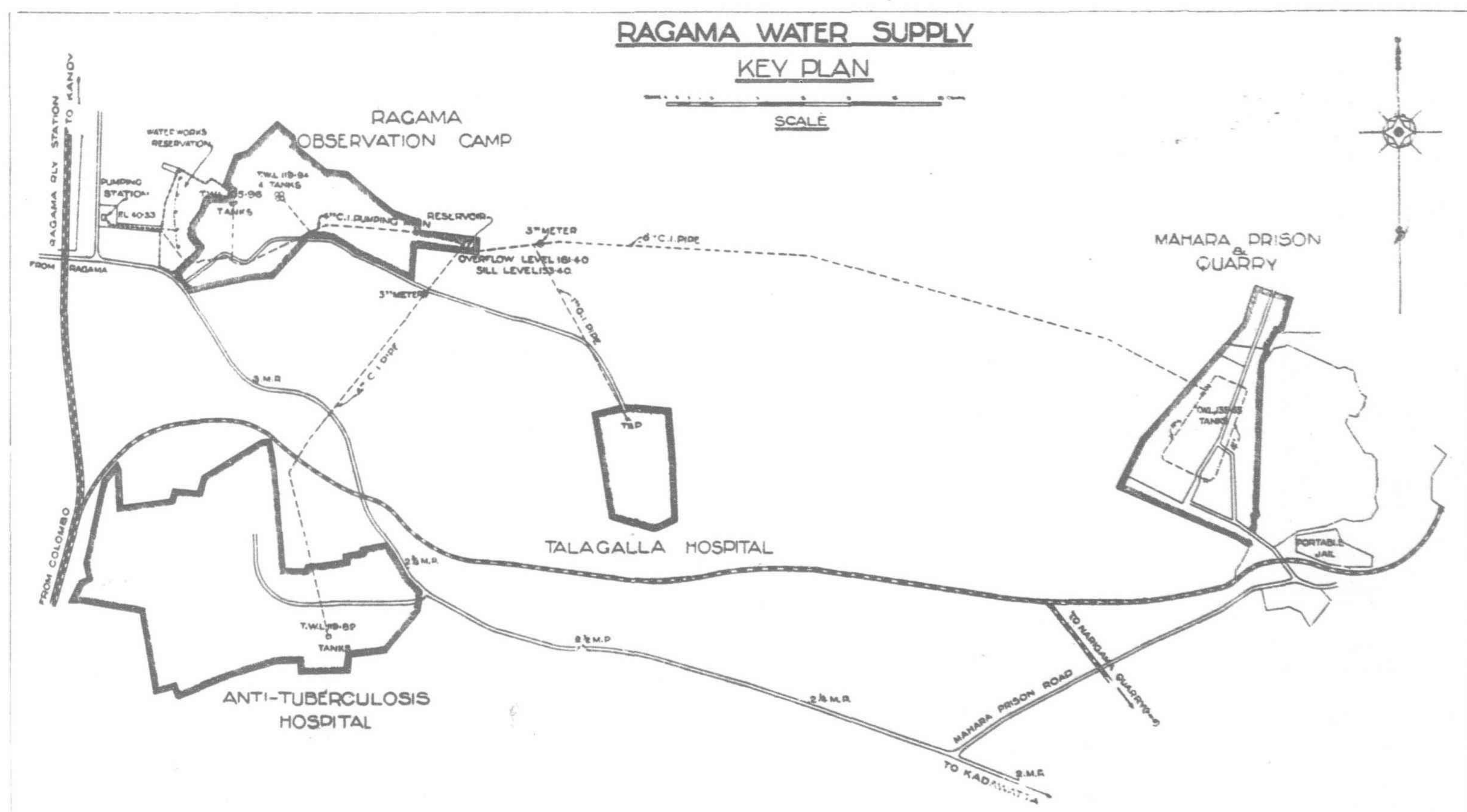
The institutions grew from small beginnings. They all wanted water for their use and had to be satisfied with shallow wells sunk in the compounds as their source of water supply. When expert knowledge was not easily accessible and the activities of bacteria were less known than now, the quality of the water thus obtained was considered good enough, but to-day, with the march of science hastened by the experience of the Great War, we have been obliged to consider the provision of a more wholesome form of water as well as the increased quantity demanded owing to the expansion of the institutions.

PHYSICAL FEATURES.—Ragama is situated in the low country, 10 miles from Colombo via the Negombo Road, and has, therefore, no natural facilities for sources of supply from upland gathering grounds. The elevation of the camp varies from about 10 to 125 feet above M.S.L.

The "Cooly Camp" in the early days comprised six units located on two knolls—Camps Nos. 1, 5 and 6 on a tract of about 19 acres lying a few chains East of Ragama Railway Station; Camps Nos. 2, 3 and 4 on a 25 acre block about a quarter of a mile South of the other site. The buildings on the former site constitute the present camp of observation; the latter site was that on which the Prisoners of War were accommodated, and which was subsequently converted into the Tuberculosis Hospital.

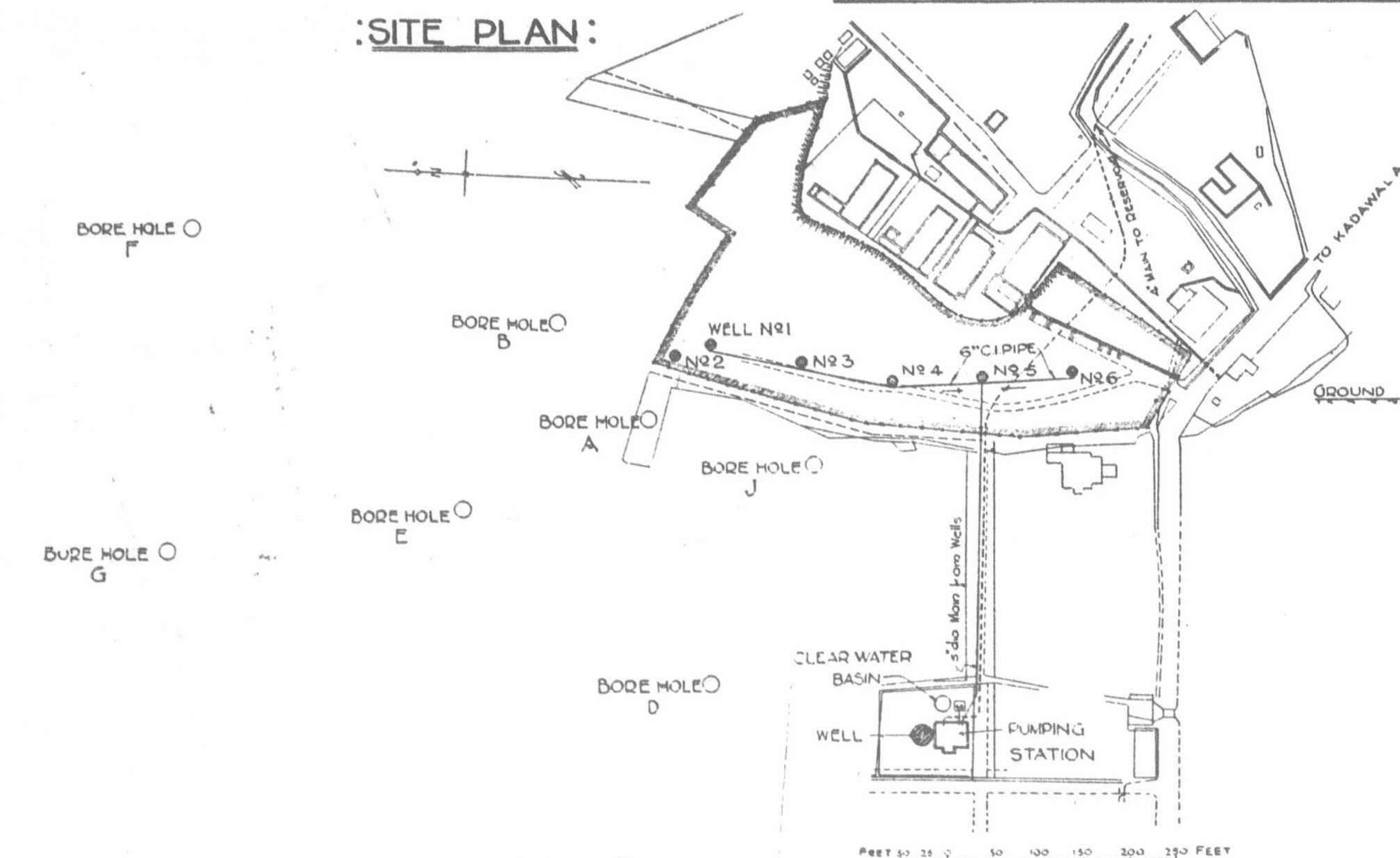
The mean rainfall at Ragama is 98-in. per annum, more than half of which falls in the four months May, June, October and

*The Engineering Association of Ceylon, Transaction for 1934

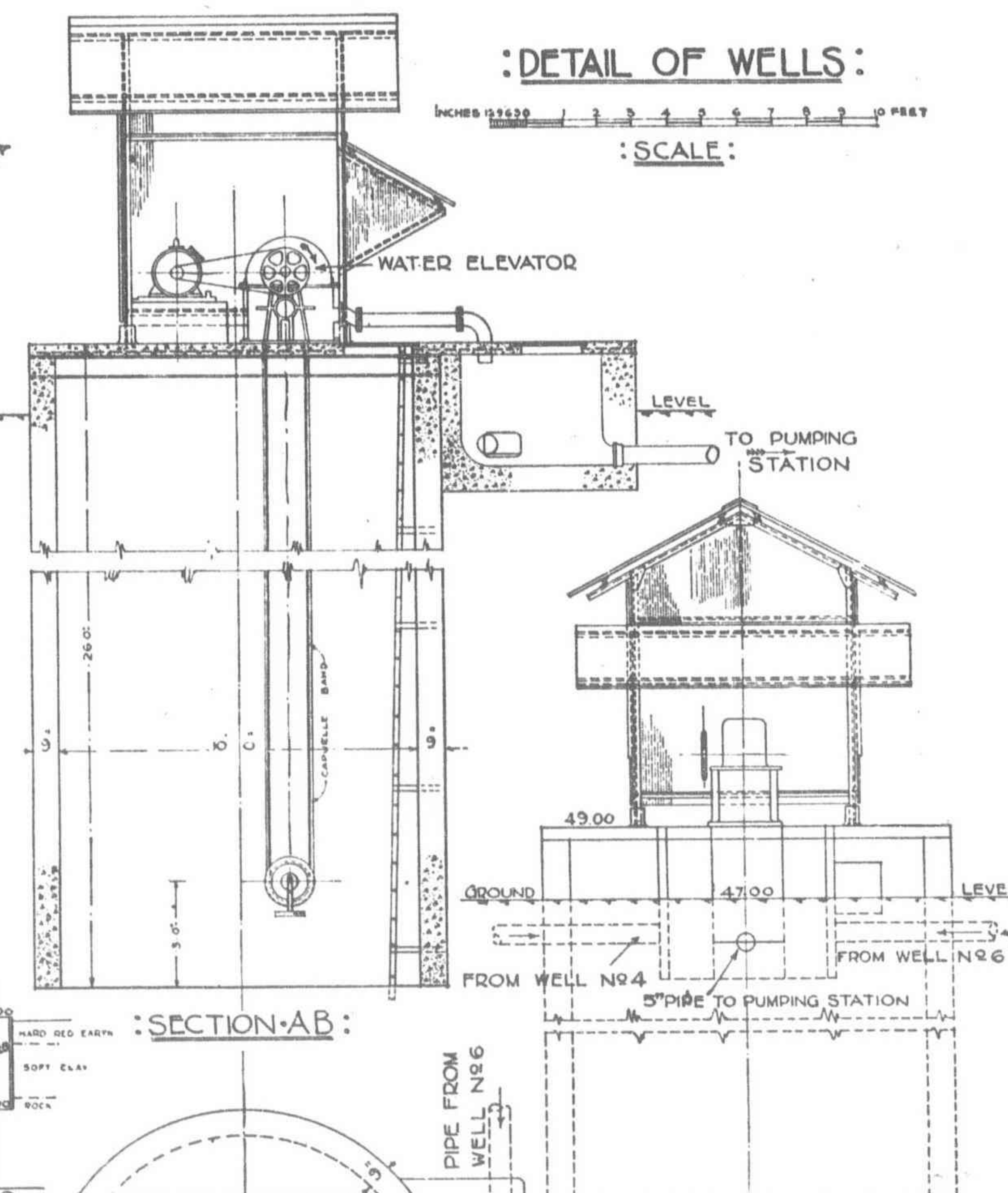


RAGAMA WATER SUPPLY

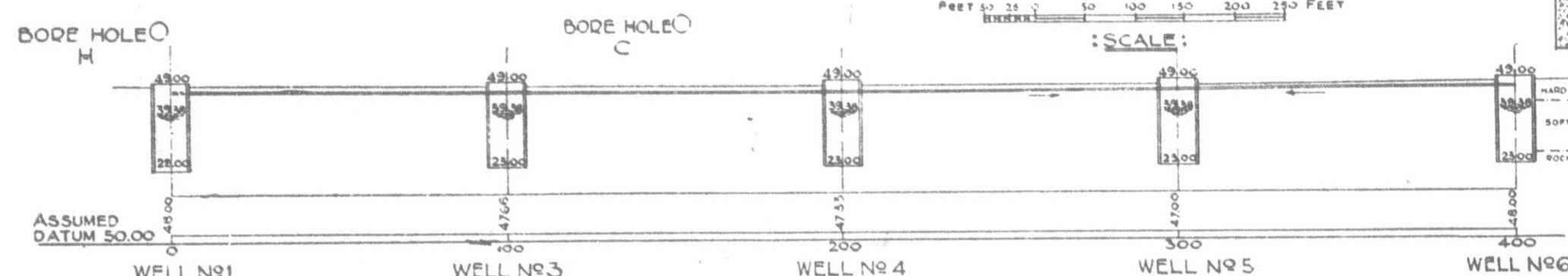
:SITE PLAN:



:DETAIL OF WELLS:

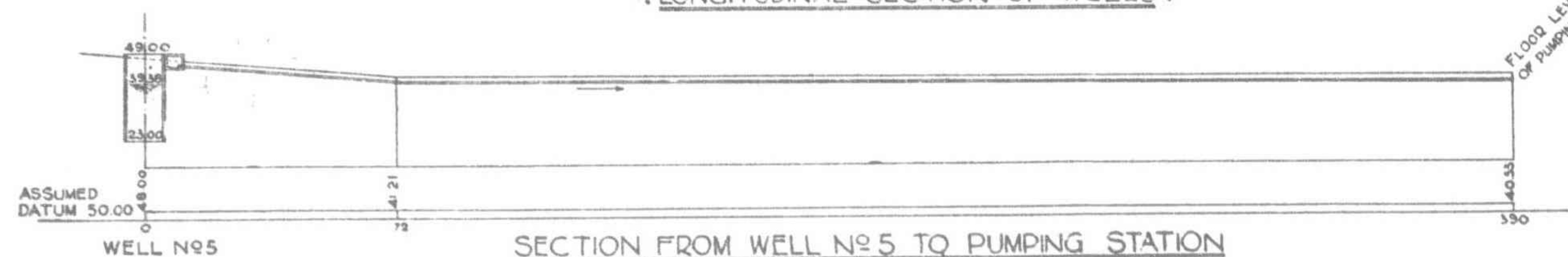


: SECTION AB :



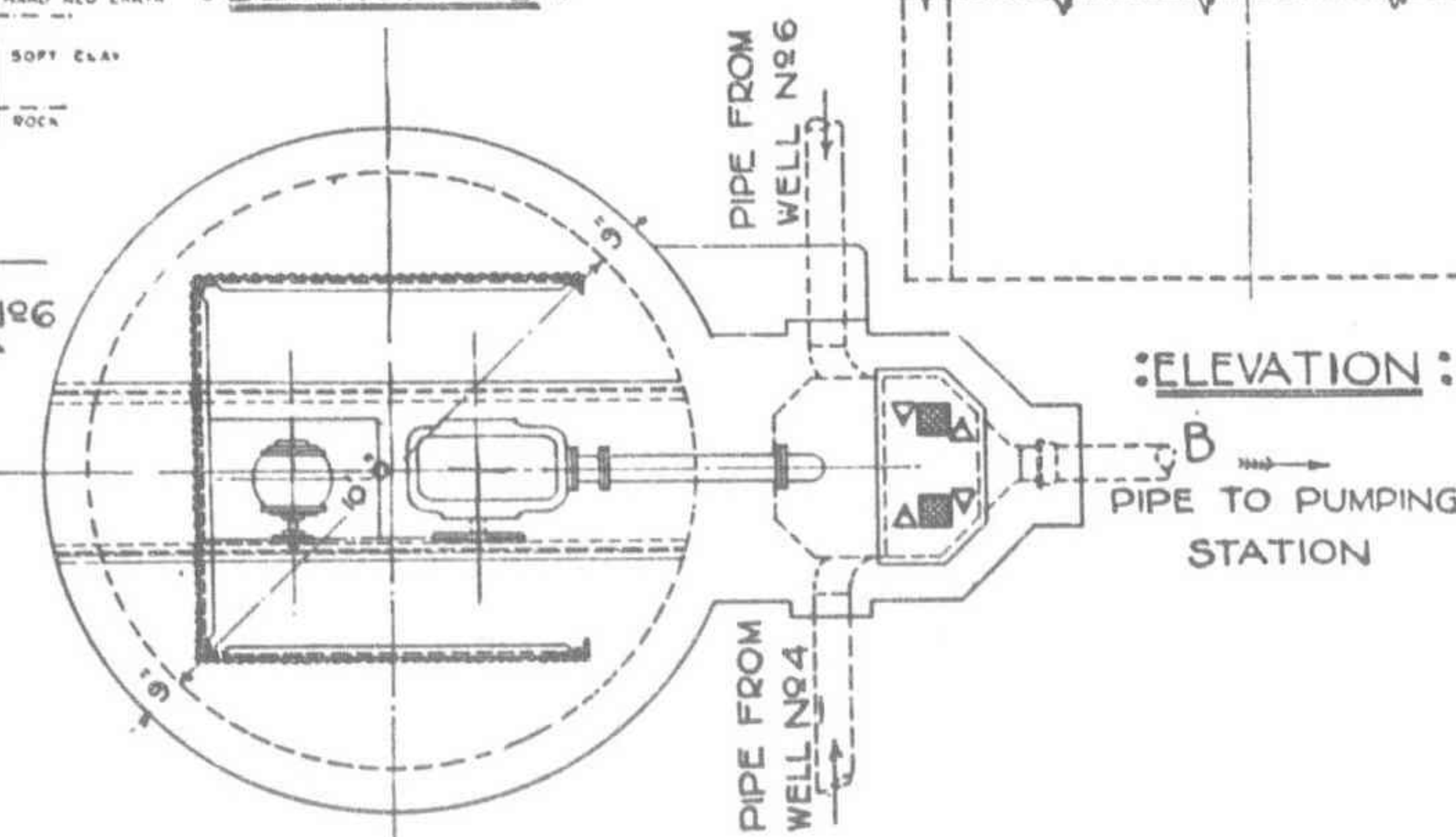
LONGITUDINAL SECTION OF WELLS:

:ELEVATION:



SECTION FROM WELL №5 TO PUMPING STATION

PLAN OF WELL N^o 5



There is comparatively small acreage of paddy in the area, and that is confined to drainage valleys formed by soil accretion. Owing to the topographical conditions described above, water for drinking purposes has to be recovered from the ground. The strata is chiefly clay, gravel and cabook overlying rock. The recovery of ground water is, therefore, a difficult matter, and isolated wells tapping the subsoil between M.S.L. and about 30 feet below show poor yields. The water in private wells is hard or has traces of iron from the deposits of ore in the rock and cabook formations.

THE ORIGINAL UNITS.—The Ragama Waterworks originated about the year 1897 with a few wells and two steam pumps, one at each of the two sites mentioned earlier which may, for convenience, be called A and B; A comprising camps Nos. 1, 5 and 6 and B camps Nos. 2, 3 and 4. A few hand pumps too were installed and the service was effected from a number of elevated iron tanks, about 1,000 gallons capacity each, to which the water was pumped from the wells.

At the Mahara Jail the supply for drinking was furnished by wells from which the water was raised to the surface by hand pumps and transported in buckets to masonry open tanks and troughs by convict labor. The first piped supply was laid in 1908 : an existing well was fitted with a lift and force hand pump, 700 gallons per hour capacity. Pumping was carried out to two elevated iron tanks, 2,000 gallons each, from which distribution pipes were laid to serve the existing masonry tanks.

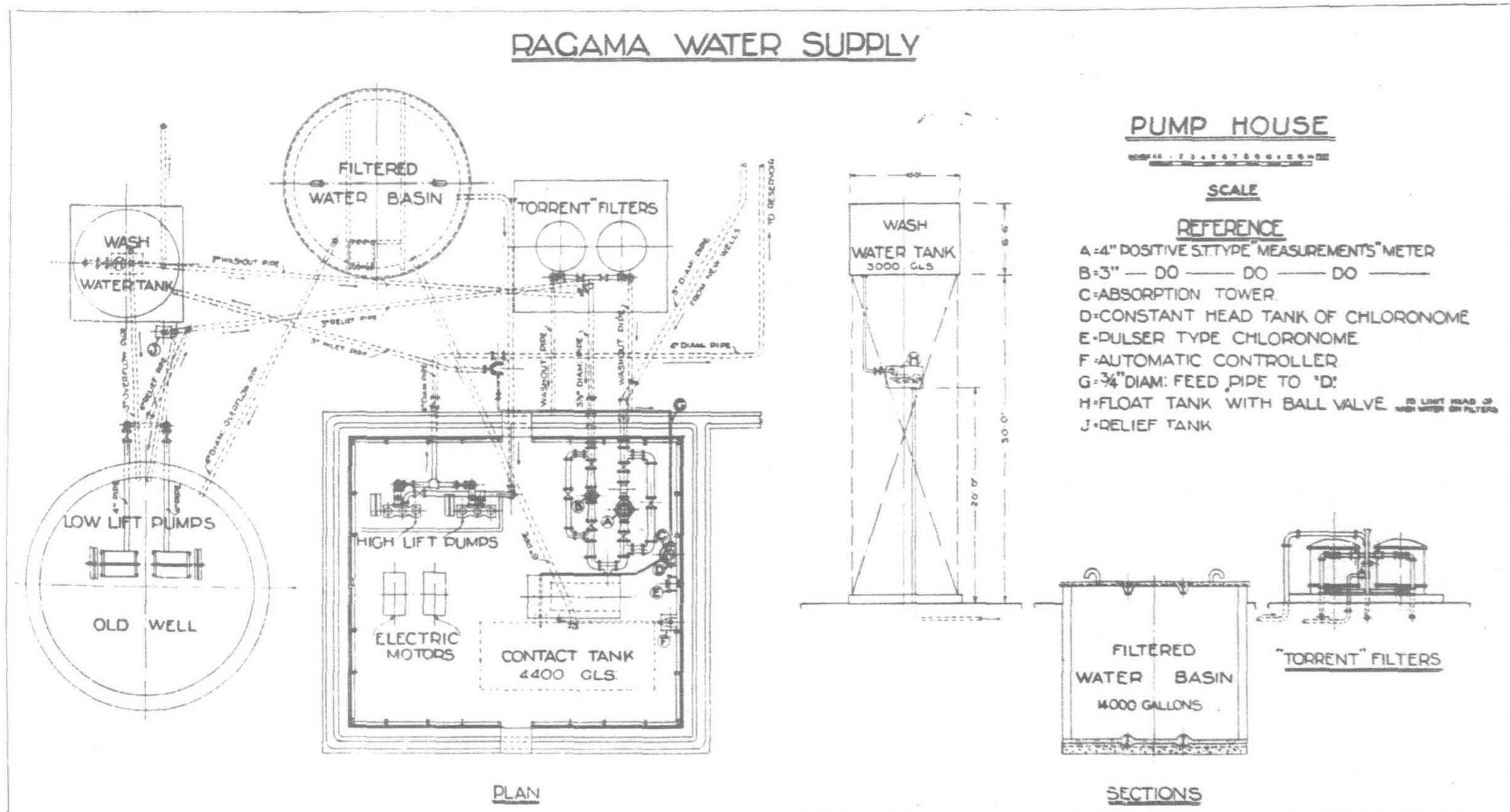
In 1911 two wells were in use : No. 1 with the pump and wooden cover was in solid cabook and not protected by steining ; No. 2 was dry stone lined and water from it was drawn by hand. The well sources were open to pollution and analyses repeatedly showed the presence of nitrites, indicative of recent contamination. Diarrhoea and dysentery were reported to be prevalent by the Principal Civil Medical Officer and attributable to bad water. Well No. 1 was, therefore, lined with brickwork ; the steining of both wells was cement pointed and rendered ; and well No. 2 was provided with a fly-proofed cover and a Ward's hand pump.

In order to ascertain the probability of an underground flow of water from the higher ground east of the pump house along the natural valley joining the paddy fields nine bore holes A to J were sunk during 1911-1912 in an area about 10 chains square. In all cases the bores were driven down till impervious or hard strata were reached.

The water from all the bore holes was analyzed and found unsatisfactory. As the choice of sites was restricted and the necessity for supply very pressing the position of a new well was located at the present pump house site and a 20-ft. diameter collecting well was sunk which has since then served as the pump well.

The construction of the new works started early in 1913 and was completed the following year at a cost of Rs. 83,162.13. The new plant for dealing with the supply from the 20-ft. well comprised duplicate sets of Tangyes, deep well and high lift pumps operated by 16 b.h.p. Petter engines installed in duplicate; and a Jewel Gravity Filter 10-ft. 0-in. diameter. The work included a brick-lined concrete reservoir of two compartments with a total capacity of 180,000 gallons; and roofed with corrugated iron. This reservoir is known as the Ragama Reservoir.

EXTENSION OF THE COMBINED SUPPLY TO MAHARA JAIL.—The improvements effected in 1911 to the Mahara supply could not cope with the conditions five years later. Continued sickness among the convicts was reported by the Medical authorities ; as much as 25% of the roll of prisoners were on the sick list on occasions, due in great measure to the deplorable want of good water.



It was found that the Ragama reservoir would afford a gravity supply to the jail. Accordingly 3-in., 2½-in. and 2-in. piping was laid from the reservoir to a new 3,000 gallon tank at the jail and distribution service was provided. At the same time certain alterations were made to the Filter Plant at the headworks, including the addition of a new wash water tank. The estimated cost of the work was Rs. 8,400.00.

The requirements of the Ragama Camp had been reduced before the extension of the service to Mahara by the transfer of the Immigration depot to Mandapam; the temporary camp there was set up in 1915 and the permanent buildings were in occupation a little more than a year later.

IMPROVEMENTS UP TO 1927.—The main pump well built in 1913 was unable to provide the entire requirements of the institutions during dry weather and seasonal shortage of water became a common occurrence. Two means of increasing the yield of the well were adopted. Improved percolation from the well area was secured by packing rubble around the exterior of the steining of half the well diameter to a depth of 10 feet and inserting adit pipes through the steining of the well. This was done by the Provincial Engineer in 1919 and he reported that the overnight recovery of the well had increased by 11 feet and pumping could be carried out for considerably longer periods than before. Later on, however, the adit pipes were found to be introducing unwholesome water and were, therefore, sealed up.

In 1922 water shortage was again reported and one of the former supply wells below the Cooly Camp was connected by a 2-in. syphon pipe to the pump well.

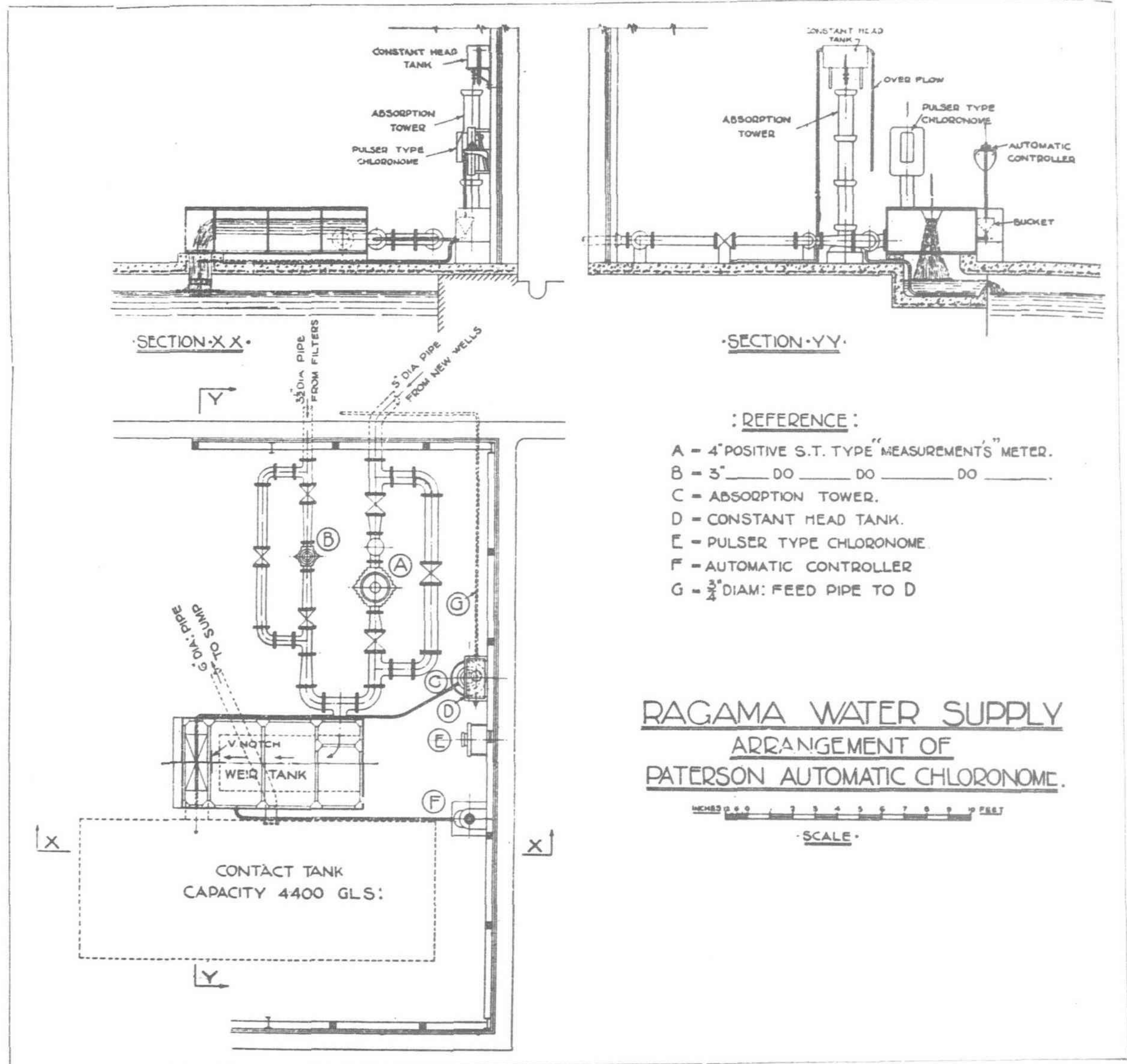
Ten years after it had been installed the Jewel Filter was found to be worn out and uneconomical to repair. As a similar Gravity Filter was not available from stock it was decided that "Torrent" Pressure Filters made by the Pulsometer Co. should be obtained. Two L size filters of this type were received in August, 1925, and fitted to the system. They are each 4-ft. 3-in. diameter, and their combined normal output is 4,200 gallons per hour.

Ragama Waterworks as now Reconstructed

INVESTIGATIONS.—We have seen how the Waterworks expanded within a period of about forty years from units serving a few thousand gallons each per diem into a combined supply scheme of considerable magnitude, with storage of 180,000 gallons in 1927, when the investigations leading up to the present improvements relating particularly to the subject of this paper were begun.

Just prior to the improvements that are now in hand the plant at the pumping station consisted of:—

- i. A duplicate set of Tangyes low-lift pumps, with vertical spindle and cylinder, for operating in deep well driven by shaft and belting.
- ii. Duplicate set of 16 b.h.p. Petter Semi-Diesel oil engines.
- iii. Settling tank of steel to hold 20,000 gallons.



- iv. Duplicate set of L size Torrent Pressure Filters manufactured by the Pulsometer Engineering Co., capable of working under a maximum pressure of 100-ft. head and dealing with 1,400-2,100 gallons of water per hour each: inlet and outlet pipes 3½-in.
- v. Wash water tank 3,000 gallons capacity on steel trestle 30-ft. high.
- vi. Filtered water basin under pumping station floor of 4,400 gallons capacity.
- vii. Duplicate set of Tangyes high level ram pumps to lift water from the filtered water basin to the high level reservoir.

The pumps were driven by the same engine through a system of shafts and belting.

There was no meter to record the duty performed at the Pumping Station. No information was available as to the yield from the well, rate of filtration or the quantity filtered per day, total amount of water pumped per day into the reservoir or consumed by the institutions.

The filters were found neglected and not operated with due regard to the level of sand, quality of media and other aspects that govern the good and efficient management of a filtration plant. Lack of skilled supervision and knowledge of the mechanics of filtration was observed and with the advent of the Health Unit of the Medical Department and the co-operation of the Sanitary Division the entire question of quality of water and quantity desirable was gone into and the present improvements are a result of such investigations.

Credit should be given, however, to the staff responsible for the operation of the Pumping Station for the manner in which the supply was maintained for several years without a breakdown—no simple task, considering the type of pumps, worn out and poorly

arranged machinery which were added to from time to time as occasion demanded.

At the beginning of the new era of investigations the Engineer was faced with many difficulties. The absence of data and statistics of any sort greatly handicapped the work. In addition the need for economy enforced the utilization, as much as possible, of the existing plant and system of piping, filters and controls and pump house. The problem was, therefore, manifold.

For determining, as far as practicable, the yield of the existing main well exhaustive and convincing tests were made continuously day and night and the result carefully calibrated with regard to the various factors which govern the yield of a well.

The tests were carried out in March, 1932. No rain fell during the period of observation. The rainfall in February was 3.72 inches in nine days and there was no rain in January; the corresponding means of 18-19 years for the same months were respectively 2.02-in. in four days and 4.34-in. in nine days. The test, therefore, was considered a fair indication of dry weather conditions.

At the time of test, the steining of the well was in fair condition and impervious, except for a little dribble from the inlets of the old pipes referred to already. The dribble was a negligible quantity. The 2-in. syphon from the two old supply wells was opened and the inflow gauged. The yield was found to be 731 gallons per hour. But this figure was modified for actual yield when the inlet was submerged against the head of the rising water of the main well.

The main well, when the supplementary syphon pipe was shut off, recuperated at the mean rate of 1-ft. in every three hours and 15 minutes, i.e., an average of 189 gallons per hour. With the syphon pipe filling in, the first section recovered in three hours and 25 minutes, equivalent to 985 gallons per hour, and the second in 18 hours, equivalent to 859 gallons per hour. The average rate of recuperation was 875 gallons per hour.

The observations disclosed that the yield of the pump well was as follows:—

(a) Main well, self-yielding	189 g.p.h.
(b) Main well plus flow from syphon pipe	875 g.p.h.
(c) Independent average yield from syphon pipe	731 g.p.h.
(d) Actual average yield of syphon well when syphon is submerged	686 g.p.h.

It was obvious, therefore, that the yield of the well by itself was very poor, viz., 189 gallons per hour, and when supplemented by the wells at high level through the syphon pipe the combined yield was 875 g.p.h.

The figure of 189 gallons per hour is a poor yield for a 40-ft. well 11-ft. 2-in. diameter at the base. Observations at the tests do not assist in determining the cause for such a poor yield, but the reason may be attributable to the bottom of well being below an impervious stratum.

The requirements of the Institutions amount to 80,000 gallons, which allow 25 gallons per person to a total population of 3,000, exclusive of kitchen and washing places at the hospital. The supply is distributed as follows:—

Mahara Jail 1,200 @ 25	30,000
Cooly Camp 1,200 @ 25	30,000
Hospital 500 @ 25	12,500
Dhobies	3,000
Kitchen	750
Nursing Sisters' Quarters	3,750
	<hr/>
	80,000

To obtain this quantity from additional sources was imperative as the main and supplementary wells could not yield more than 21,000 gallons per 24 hours at times of drought.

Preliminary investigations were made by the Provincial Engineer on likely sources in the neighborhood and the following were reported upon:—

Hinnagoda Wewa Tank.
Kapuwa Tank.
Dikmaguwewa or Perlanda Tank.

Analyses of the water, however, proved unsatisfactory as the catchments were subject to pollution; and since conservation of such catchments and treatment of the water would prove uneconomical and the sources involved water rights, further investigations of the above sources were abandoned.

NEW WELL SOURCE.—Attention was then directed to the possibility of obtaining a supply from shallow wells sunk at the base of the western slope of the Cooly Camp where the original supply wells are situated.

One of the wells was tested in April, 1929. Its diameter is 8-ft. 4-in. and depth 25-ft. below ground level. The yield in 12 hours' pumping was reckoned to be 15,000 gallons. It was, therefore, considered that on the average five extra wells would be required. It was observed that the depths of the wells should necessarily vary with the distance between them, and subsoil conditions; and provision was made for an average depth of 25-ft.

The new scheme, therefore, has five wells in line, 100-ft. apart, as shown on drawing No. 2, and each well has an independent pumping unit, the delivery pipe of which is connected at the surface by 5-in. C.I. piping to the main pump house.

The new wells have an internal diameter of 10-ft. with steining of impervious concrete 12-in. thick and are provided with reinforced concrete covers which support the pumping plants and sheds.

The well area is Crown property and formed part of the premises. The area considered necessary to be conserved has been enclosed with tall barbed wire fencing on concrete posts and all old drains and channels that used to drain from the Camp buildings to this area have been deviated by masonry channels. Buildings, etc., within the area have been demolished. The conserved area is in the control of the pump house staff.

IMPROVEMENTS TO HEADWORKS.—All the pumping machinery at Ragama is now operated electrically. The Electric motors replaced the old Petter oil engines and are 20 b.h.p. each, 400-v. 3-phase, 50-cycles with necessary control gear. Special electric service main was laid from the transformer for this and the other motors of the elevator pumps. The indenting for electric motors and their installation were done by the Factory Engineer with the assistance of the Department of Electrical Undertakings.

The pumping units at the new wells consist of "elevators"—known as the "Boultons" water elevator, which is in the form of a band, the invention of a Frenchman, Monsieur Caruelle. Hundreds of water installations with these bands were utilized on the battlefields of France in the Great War. The present band is of Gandy-Willesden type, an improvement based on experience. The cells are a continuous metallic band of aluminium bronze mounted on the driving band which is endless and is held down by a bottom pulley which merely keeps the lower end of the loop taut and is suspended on the loop without fixing. Various sizes of these elevators are available for hand and power operation.

The motor driving each elevator is 2½ h.p., 3-phase, 400 to 416-volt, 5-cycles A.C. with an approximate speed of 720 r.p.m.

Each unit is housed in a corrugated iron shed with open front. The starting switch gear for each pump is in its own house. The meter for registering the current consumed is in the pump house at the main switch.

The draw-off from each well at present is approximately 1,200 gallons per hour, and the current consumed is about a third of a unit, thus making a cost of 10 cents to deliver that quantity at the surface into the 5-in. diameter C.I. pipe through which it gravitates to the pump house. The water from the wells is measured at the pump house by a 4-in. positive meter, manufactured by Messrs. Measurements, Ltd., capacity 7,000 to 10,000 gallons per hour. The pipe line is by-passed at the meter. The pumps are run for approximately six hours per day; and the average total quantity pumped per day has been 16,000 gallons in dry weather and 35,000 gallons in the wet seasons.

The water from the new wells is declared good, but is chlorinated; the supply from the old main well has to be filtered and chlorinated. Water from the latter is pumped by the old low-lift pumps now operated by belting and electric power through the Torrent Filters; and passes on to the chlorinating apparatus through a 4-in. C.I. pipe. A 3-in. Measurements positive meter, capacity 3,000 to 6,000 gallons per hour fitted on the 4-in. pipe, registers the supply from the filters.

The two meters, 3-in. and 4-in., on the old and new systems, respectively, enable the total supply from the wells to be recorded at the pump house.

The Torrent Filters were supplied by the Pulsometer Engineering Co., Ltd. The filters are L size with an effective area of 14.2 sq. ft. each. For drinking water a higher rate of filtration than 80/90 gallons per sq. ft. of area per hour was not advised; at this rate 1,135 to 1,280 gallons per hour would be filtered. Arrangements are

provided for controlling the supply within the above limits. The filters operate at a constant head of 15-ft.

The wash water tank is situated at 30-ft. above filter level. The effective head on the filter is controlled by a constant level tank at an intermediate height in the same trestle at a level sufficient to produce 12-ft. pressure at the wash in connection of the filters.

CHLORINATION.—The water from both sources is chlorinated by a Paterson Automatic Chloronome of the pulser type, which is capable of automatically treating any quantity of water up to 10,000 gallons per hour with a maximum chlorine dose of one part per million. It consists of a constant level tank holding the supply of fresh water for the preparation of chlorine solution; a Paterson Pulser type chloronome complete mounted on aluminium board with regulating valves, chlorine filter, pressure gauges and volumetric meter in glass; an earthenware absorption tower with pumice and ebonite fittings for the production of chlorine solution which is connected to the weir chamber for dosing through a rubber pipe of special quality little affected by chlorine.

The automatic dosing device is operated through a weir chamber of steel, mounted on the floor, which is connected to the chloronome by bucket and lever for adjustment of the correct dose. The weir chamber has perforated baffle plates to still the flow through it. The chamber is bitumen coated and of rigid construction.

The chlorine dosage control is effected by a valve operated through a lever system by the variations in the head of liquid over the weir sill. These variations are transmitted to the automatic valve. A funnel-shaped bucket is suspended from one end of the lever of the automatic valve in such a manner that the base of the bucket is exactly level with the opening of the V notch weir in this case. A small pipe is fitted in the weir chamber and connects with the bottom of the bucket by means of a flexible tube. When the water begins to flow over the V notch it will also rise in the bucket to a height corresponding with the head of water over the notch. The weight of water in the bucket bears a direct relationship to the weir flow. The movement caused by the increase or decrease in weight actuates the lever connected with the chlorine valve and feeds a correct proportion and concentration of the chlorine in parts per million.

Chlorine gas is supplied from cylinders purchased locally.

The treated water flows into a contact tank below the floor of 4,400 gallons capacity. This tank originally received the filtered water from the Torrent filters and acted as a sump for the suction pipes of the high level pumps. In the new lay-out, the tank receives the chlorine dose at the point where the weir empties into it; and allows for sufficiently long contact before the water gravitates into a sunk tank outside the pump house.

The sunk treated water tank is the old circular steel settling tank sunk into the clay like a cylinder with top at ground level, and is 15-ft. 4-in. diameter, 14-ft. 4-in. deep, holding 14,000 gallons. It is lined internally with 9-in. brickwork in cement and rendered watertight. The cover is of reinforced concrete with proper vent pipes and inspection doors.

From the clear, filtered water basin the water is lifted to a high level storage reservoir 2,300 feet away by the high-lift vertical Triplex plunger pumps each capable of delivering 6,000 gallons of water per hour against a head of 200 feet. The C.I. pumping main to the reservoir is 4-in. diameter. The static head above foot valve of pump to inlet level of reservoir is approximately 160 feet.

RESERVOIR.—The reservoir is built on high ground into the solid cabook soil and has two compartments, 70-ft. × 25-ft. each, with 8-ft. height of water giving total storage of 180,000 gallons.

The walls are of cement concrete 1-ft. 6-in. thick, built to a batter of 1 in 8 and lined with brickwork. The floor is of 9-in. thick concrete. The corners are rounded to a radius of 2 feet. The party wall is carried up to the same height as the side and also has the same batter on its faces. The average thickness of party wall is three feet.

Both compartments are covered with corrugated iron roofing on steel trusses. Access is provided through doorways in the gable ends. A valley gutter on the party wall drains the roof water to surface drains around the reservoir which also receives the overflow water.

A valve chamber is provided outside the reservoir and contains all the controls for the inlet, outlet and washout pipes.

OPERATION AND CONTROL.—The mechanical operation of the filter plant, etc., is in the hands of the Factory Engineer. The Sanitary Engineer obtains periodical analyses of the water and directs the Factory Engineer as to adjustment and control of filter media.

The above description of the source, mode of collection, etc., are illustrated in the diagrams. It will be observed that the relative position of pumps and filter plant and their controls appear as if

better arrangement is possible. It should be noted, however, that the plant has grown from small beginnings of a temporary nature and gradually evolved into a matured plant of modern dimensions and efficiency. The revision and rearrangement has been done with a view to utilizing, as much as possible, the existing plant and equipment; and has, therefore, entailed much difficulty.

A few figures of the cost of running the plant then and now would be of interest.

The annual cost of running by Petter engines averaged Rs. 4,500.00 in the years immediately preceding the installation of the electric motors. This covered the cost of pumping approximately 16 to 35 thousand gallons per day to all the institutions.

It is too early to give definite figures of cost of all electrical pumping units now in operation, as some of the plant has been installed only recently. The electric motors, however, replaced the oil engines two years ago. Their running cost is about 17 units per hour, i.e., Rs. 5.10, at 30 cents per unit, for pumping 5,000 gallons from the deep well to the reservoir.

The elevator pumps at new wells consume each 261 units per 1,000 gallons, i.e., eight cents per 1,000 gallons.

The cost of lifting the water from the new basin to the reservoir is 91 cents per 1,000 gallons, which includes the full quantity of water received from the new well sources.

NEW DISTRIBUTION SERVICE.—As stated before the service is distributed to the following premises:—

	Population	Quantity per day.
Mahara Jail	1,200	30,000
Observation Camp	1,200	30,000
Hospital	500	20,000
and special points.		80,000

The Mahara Jail was served by a W.I. pipe which was incrustated. In order to supply the new demand created by the reconstruction and extension of the jail in 1930-32 a new 6-in. C.I. main with a 4-in. circulating distribution pipe has been laid. There are two bathing cisterns and six covered reinforced concrete drinking and storage cisterns to supply the wards. Service connections to all buildings have been provided. The estimated cost of the improvements was Rs. 35,000.00, which included 4,800 feet of 6-in. and 2,100 feet of 4-in. C.I. pipes and specials. Work was commenced in March, 1932, and completed in April, 1933.

A 3-in. Measurements S. T. type positive meter is being installed in the main to register the quantity consumed by the jail.

The Anti-Tuberculosis Hospital had tanks of approximately 3,000 gallons total capacity installed from time to time. New two-storey buildings of improved type and single-storey wards were recently constructed.

There are 14 wards and appurtenant buildings besides the Medical Officer's and staff quarters.

A new 4-in. C.I. main has been laid from the reservoir into the premises, with 3-in. and smaller distribution pipes. To supply the higher buildings a 4,800 gallon C.I. service tank has been provided on a steel trestle 23-ft. high.

The estimated cost of the improvements was Rs. 15,000. Work was commenced in February, 1932, and the new connections put into service in February, 1933. A 3-in. measurements meter is provided on the main for registering the consumption of the hospital premises.

The final points of the improvement scheme are now in progress and with the completion of the work the institutions at Ragama should have an excellent water supply system. The figures regarding quantity of water available, however, are based on empirical data, and it is still too early to determine accurate figures of yield and draw-off from the new system of wells. Records are being maintained: and knowledge of the conditions during a few dry and wet seasons should provide valuable data as to the nature and extent of modifications that may be necessary or desirable at the sources.

The installation of the meters and new system of pipes has been a costly undertaking. The expenditure is justified considering the improved conditions of supply resulting therefrom; and the valuable data which will be available from the new records for the formulating of future improvements or additions.

In conclusion my thanks are due to Mr. W. J. Thornhill, Director of Public Works, for his kind permission to have access to official records in the preparation of this paper; and to the Factory Engineer for information relative to the cost of operation of the plant.

Semi-Continuous Wire-Rod Mill in Japan

By E. KÄSTEL, Magdeburg

ONE of the latest and most efficient wire-rod mills in Japan is the semi-continuous rolling-mill plant of the Kobe Steel Works in Kobe. A plan of the plant, as published in *Engineering Progress*, Berlin, is shown in Fig. 1; Fig. 2 is a view looking at the rear side of the finishing mill.

The plant contains the following equipment:—Two producer-gas-fired continuous furnaces with the ingot pushers; the approach roller table with bloom-turning device; the first continuous train comprising six two-high stands, the first and second stand having rolls of 500 mm. (19.7-in.) dia., the third up to the sixth of 450 mm. (17.7-in.) dia. by 900 mm. (35.5-in.); the shear roller table, which transports the material to the second continuous train, with shear of the cutting-up type for cropping and dividing; the second continuous train, embodying eight two-high stands with rolls of 315 mm. (12.4-in.) dia. by 800 mm. (31.5-in.); two wire-rod stands; the six-stand finishing mill with rolls of 250/290 mm. (9.85/11.4-in.) dia. by 800 mm. (31.5-in.) in the first and up to the fifth stand, and 900 mm. (35.5-in.) in the sixth; ten automatic Garrett-type reels with a device for transferring the material to the adjacent chain conveyor belt.

As raw material, the mill uses small ingots 140 mm. (5.5-in.) square at the thick and 120 mm. (4.7-in.) square at the thin end and weighing about 180 kg. (400 lb.).

These ingots are introduced into the continuous furnaces by pushers of a capacity of 14 tons pressure each. The ingots, which because of their tapered shape are placed side by side with the thick and thin end alternating, are pushed through the furnace and accordingly drop on the roller table alternately with the thick and the thin end forward. Every second ingot is therefore turned end for end by a special device arranged in the approach roller table, so that the material is always fed with the thick end into the rolls and the blow holes are moved towards the rear end of the billet. The billet leaves the first stand and after having passed a roller table with manipulator, enters the second on edge. The material leaves the last stand of the first continuous mill with a cross-section of 47 mm. (1.85-in.) square.

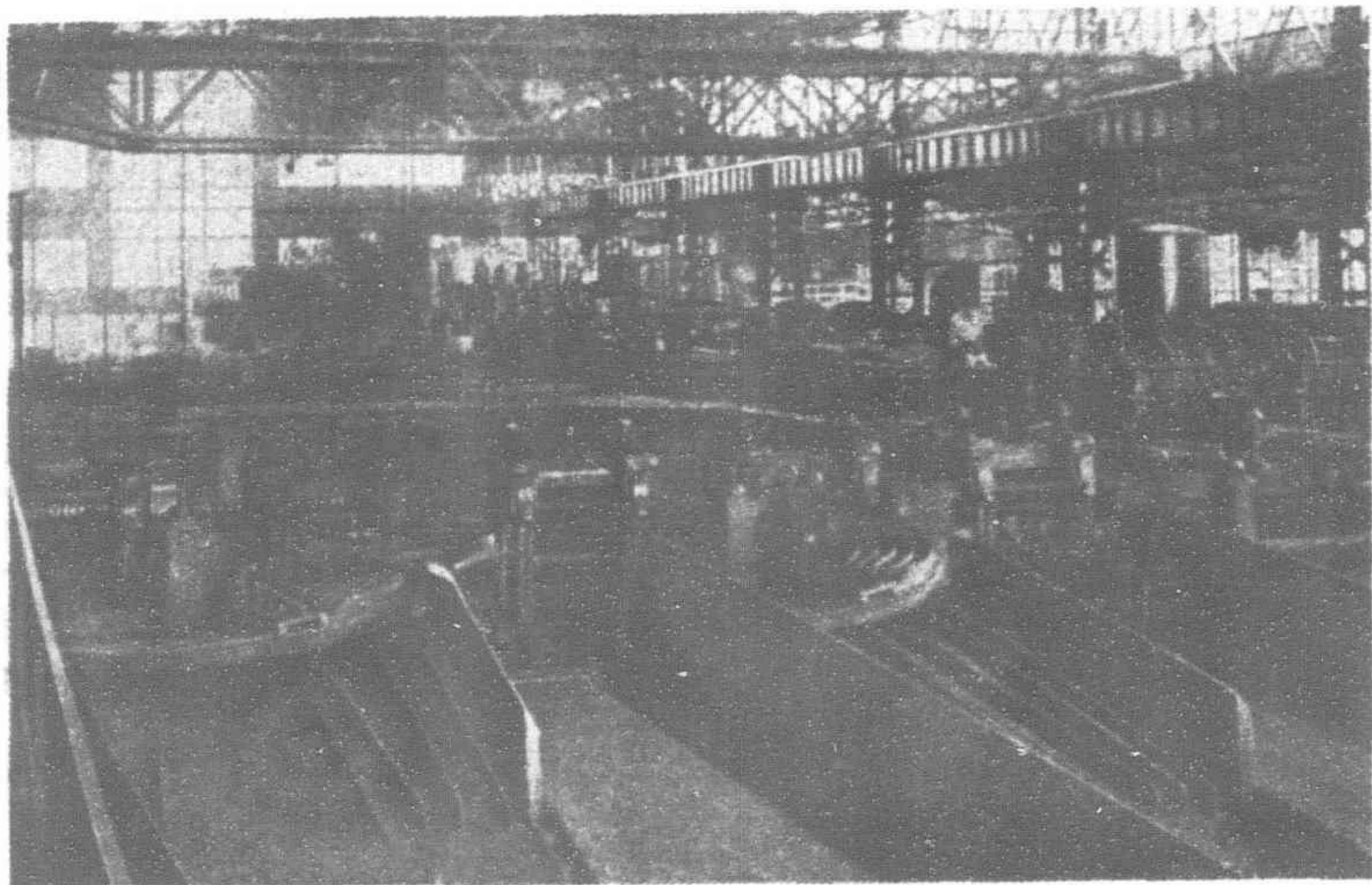


Fig. 2.—View of the Wire-Rod Mill

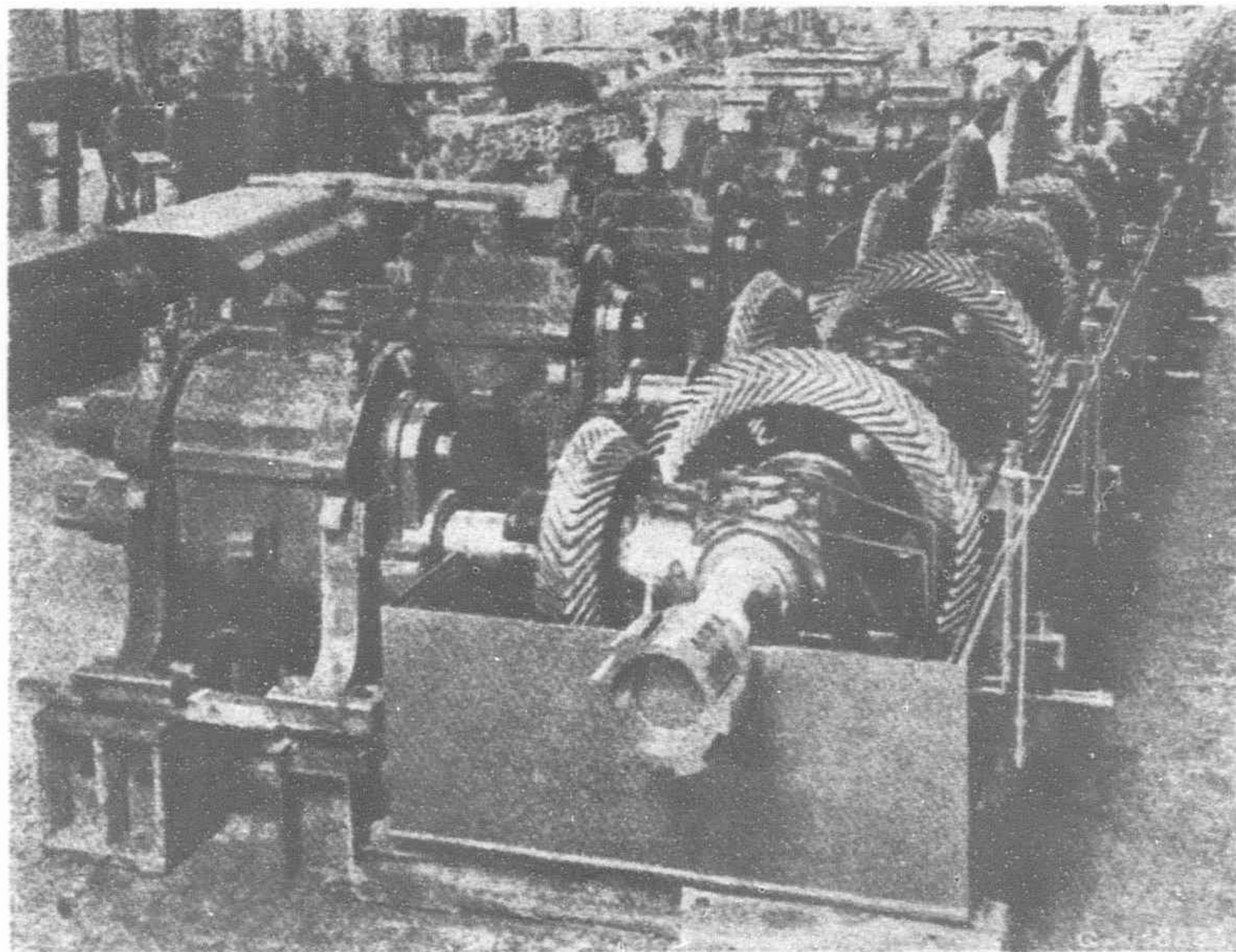


Fig. 3.—Transmission gear and pinion stands of first roughing train

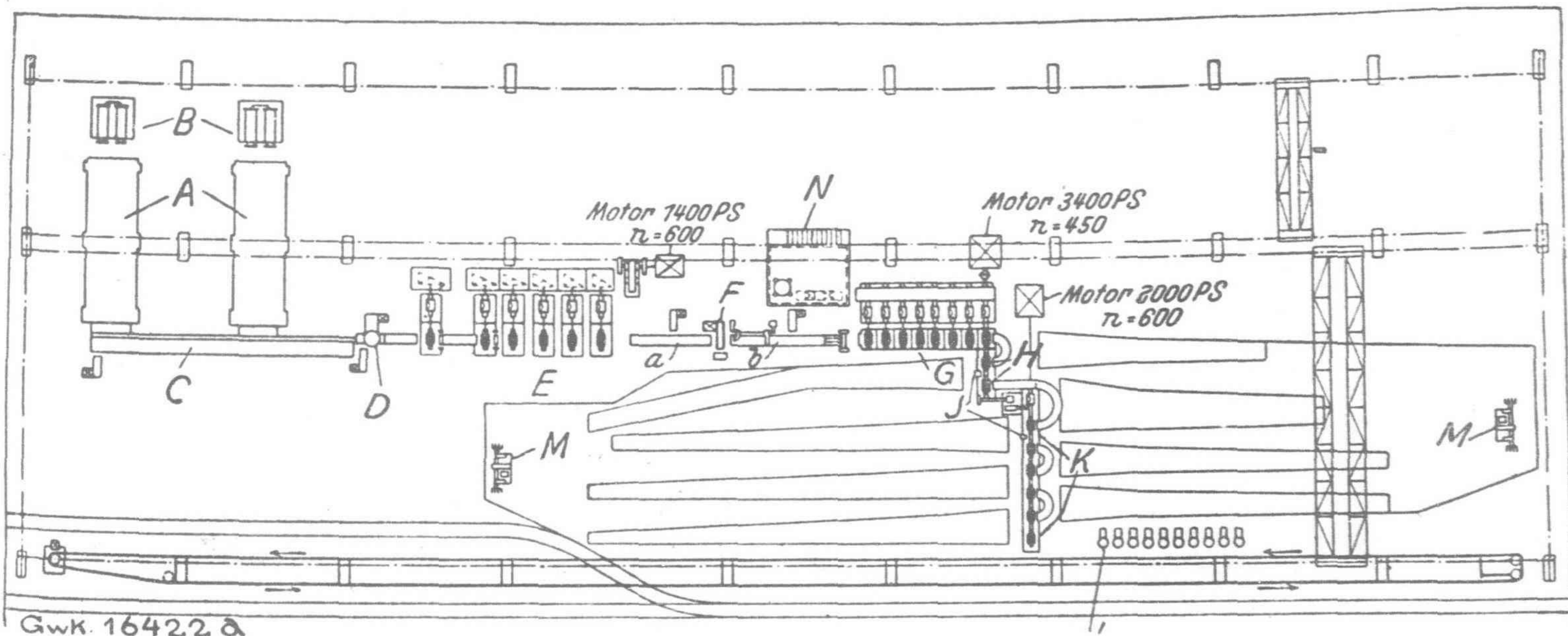


FIG. 1. PLAN OF THE SEMI-CONTINUOUS WIRE-ROD MILL OF THE KOBE STEEL WORKS

A Continuous furnaces
B Pushers
C Approach roller table
D Bloom turning devices

E First continuous train
F Shear
G Second continuous train

H Two wire rod stands
J Cropping shears
K Finishing train

I Garrett-type reels
M Scrap reels
N Oil cellar
a, b, Shear roller tables

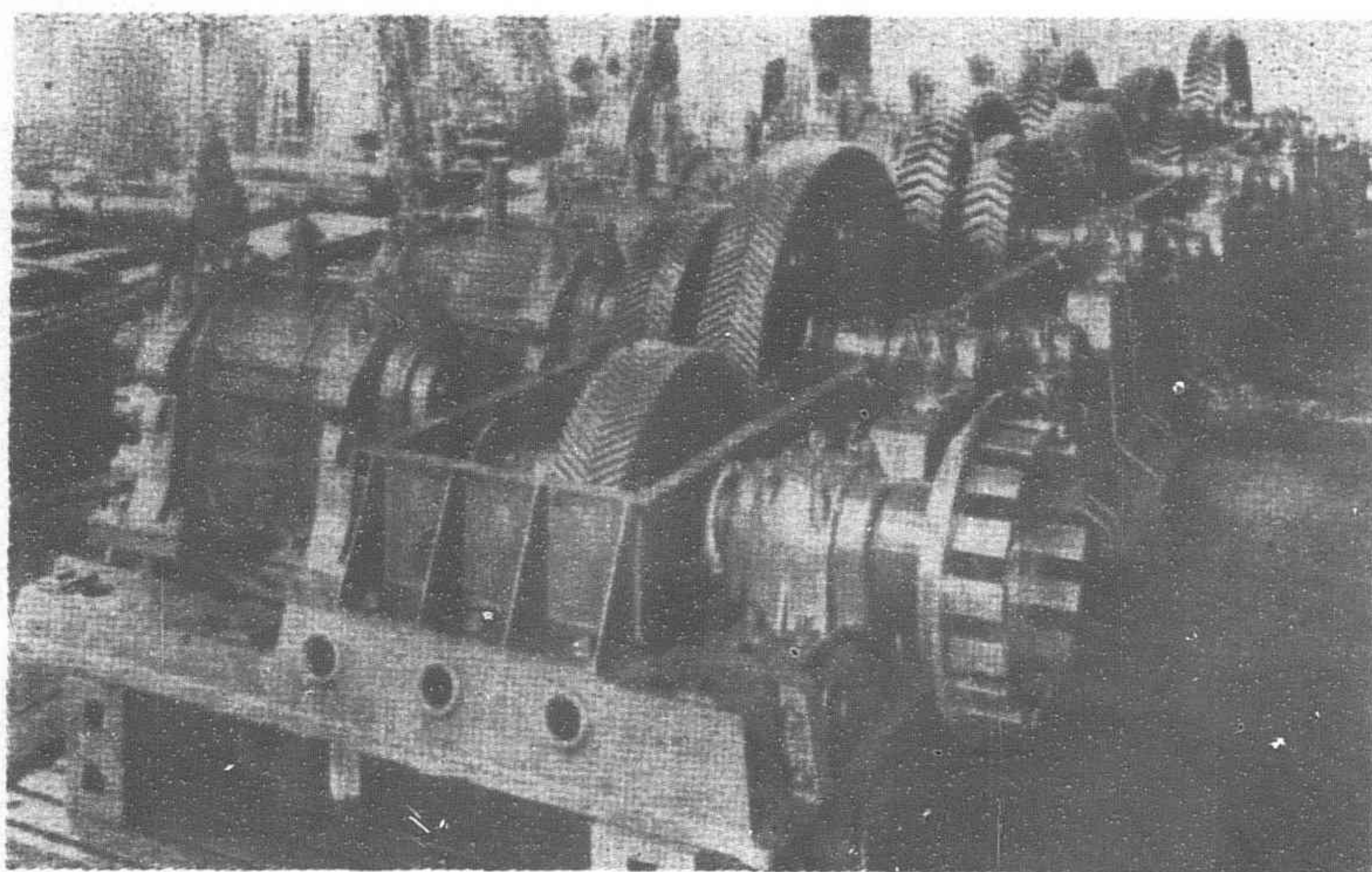


Fig. 4.—Transmission gear and pinion stands of second roughing train

The six-stand train is driven by a motor of 1,400 h.p. running at 600 r.p.m., which, over a flexible coupling and a reduction gear of 1 : 7.2 ratio, drives a longitudinal shaft and, from this shaft, the different stands over bevel wheels. Two flywheels arranged on the high-speed pinion shaft absorb the shocks. The six stands are placed so far apart that high peak loads are avoided as much as possible. On account of this arrangement bevel-wheel drive was chosen; the bevel-wheels have milled double-helical teeth and are enclosed in dust and oil-proof casings.

The pinion stands, shown in Fig. 3, are entirely enclosed and fitted with oil-circulation lubrication for the bearings, the teeth of the pinions, and the driving gears. The same is to be said of all other pinion stands, gears, and housings of the mill, all of which are connected to a central lubrication system.

The central-lubrication plant comprises two pump sets, a pressure vessel, pressure and return mains, and an oil reservoir, which latter serves at the same time as cleaning tank. The two electrically driven pumps draw the cleaned oil from the last compartment of the reservoir and pump it into the pressure vessel. From there it is forced to the various consuming points, returning from these to the reservoir by gravity.

The pressure in the vessel fluctuates between 1 and 1.7 atmos. (14 and 24 lb. per sq. in.) gauge. As soon as either limit is reached, the pumps are automatically switched in or out. If for any reason the pressure drops below or exceeds these limits, a contact manometer sets an alarm bell going, which calls attention to the trouble. The bell is also sounded when, with the pump standing still, there is an interruption in the flow of oil through the pressure pipes. This is effected by placing a flow indicator with alarm contact in the pressure line. On the outside of the pressure vessel an oil-level indicator and a pressure gauge are provided to enable the pressure and the height of the oil level to be read at any time.

Each of the two pumps has a capacity of about 400 litres (abt. 90 Imp. gal.) per minute, the motors developing 5 h.p. at 900 r.p.m.

The speeds of the six stands of the first continuous train are : 25.6—25.6—38.6—54.7—85—116.9 r.p.m. The shear for cropping and dividing is of the horizontal type.

The driving motor of the second continuous roughing mill, of 3,400 h.p. rated output and 450 r.p.m., is placed in line with the eighth stand. It drives not only the eight stands of this train, seven of them through spur gears with double-helical teeth, Fig. 4, but also the two stands arranged on the extension of the line of the eighth stand. These ten stands, i.e. the stands No. 7 to 14 of the second continuous train and the adjoined stands No. 15 and 16, run at the following speeds : 25.2—36.15—56.7—81.3—127.5—183—287—450—450—450 r.p.m.

The six-stand finishing train is driven by a motor of 2,000 h.p. rated output at 600 r.p.m. The rolls of this mill Fig. 5, have roller bearings, and for this reason the stands are of the open-top type to facilitate dismantling, while all the other stands of the plant have closed-top housings. Fig. 5 also shows the design of the repeaters at the back of the finishing train. The first repeater, which delivers the material from the second continuous roughing train to the adjoined first finishing group is a triple repeater, the subsequent ones being four-, five-, and six-fold repeaters.

The finished material is coiled by ten automatic Garrett-type reels. These drop the coils on to a device by which they are transferred to a chain conveyor, whence they are removed after having cooled down, and bundled up and shipped.—Since the end of 1934, the production of the mill has amounted to 700 tons in 24 hours, a figure of 600 tons having been reached shortly after starting up the plant. These figures show that the plant is one of the most efficient wire-rod mills of the world. It has been built by the Fried, Krupp Grusonwerk A.-G., of Magdeburg-Buckau, and is in operation since April 1933.

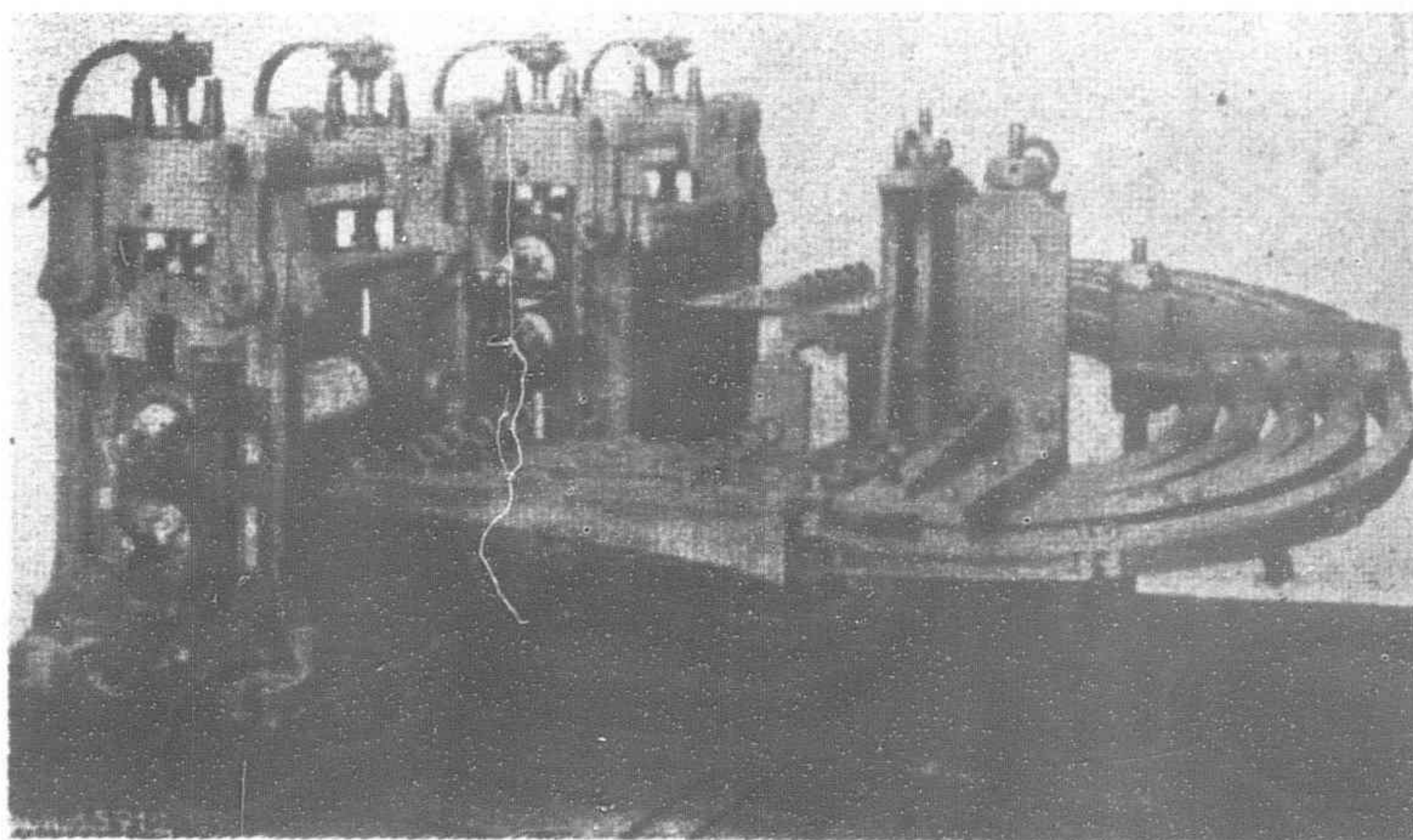


Fig. 5.—Stands of the finishing train equipped with roller bearings

NEW KELANI BRIDGE

A new plan to bridge the Kelani River about a quarter of a mile above Victoria Bridge and linking up directly with the Kandy Road, it is learned, has been put up to the Government by the P.W.D.

According to this plan, Victoria Bridge will not be reconstructed, but will remain in use only as a traffic link for the Negombo-Colombo Road.

The new bridge will span the river at Weragoda on the Colombo side and at the junction of the Peliyagoda deviation with the old Kandy Road on the other side.

It will also be necessary to extend the North and South Baseline Road right up to the river at Weragoda, so that the new bridge may have an adequate road approach. At present there is no road at this point of the river.

Also there will have to be constructed a new road connecting Prince of Wales Avenue with the extended Baseline Road, so that the new bridge may be accessible to Colombo North.

The whole project, including the construction of the new roads that will become necessary, is estimated to cost about Rs. 2,000,000.

The proposed bridge alone is expected to cost about Rs. 1,125,000. It will be a thoroughly modern structure, with wide double traffic lines and a pavement on either side.

It will be an all-steel structure and is planned with a view to meeting traffic demands that may arise half a century hence.

It is intended that this bridge should mainly serve as a link between Colombo and the Kandy Road across the river, since it will provide a shorter approach from Colombo to that road and will be capable of taking any traffic load.

Thus the traffic strain on Victoria Bridge will be reduced and its life extended.

The extension of Baseline Road to the river will open up a new residential area and make it possible to fill up the swamps in the neighborhood.

This new road is likely to be built on an embankment so as to elevate it above flood level.

Better Housing for Shanghai Workers

Y. L. LEE, General Secretary of the Labor Welfare Commission of Greater Shanghai

THE housing problem, which is very common to large cities throughout the whole world, seems to be especially acute in Shanghai. Shanghai is the most important industrial and commercial city of China. In it live wealthy Chinese and many poor people. Because of widespread misfortune, probably due to floods and other causes, farmers from inland centers have been forced to flock to Shanghai. They have become unskilled laborers, such as ricscha pullers, wharf coolies and the like. It is difficult to determine the exact number of this class of casual laborers. Ricscha pullers alone number over 80,000 and their dependents about 240,000. Most of these unskilled workers live in grass huts. According to the recent registration carried out by the City Government there are about 30,000 such huts with 94,122 dwellers scattered all over Shanghai. There must be some who failed to register also. Therefore it is not easy to fix the exact numbers.

General Wu Te-chen, Mayor of the City Government of Greater Shanghai, declared some time ago that 1935 would be a "social reconstruction year" for Shanghai. In addition to promoting mass education and other movements, the Mayor and many other officials of the City Government have been desirous of meeting the wishes of the general public that better housing be provided for the poor of Shanghai. With this view in mind there was organized in April, 1935, the Labor Welfare Commission of Greater Shanghai. Mayor Wu is the Chairman, Secretary-General, Mr. O. K. Yui and all the Commissioners of the City Government, together with about twenty other leading residents of Shanghai of different nationalities, compose its membership. It is the privilege of the writer to be the General Secretary.

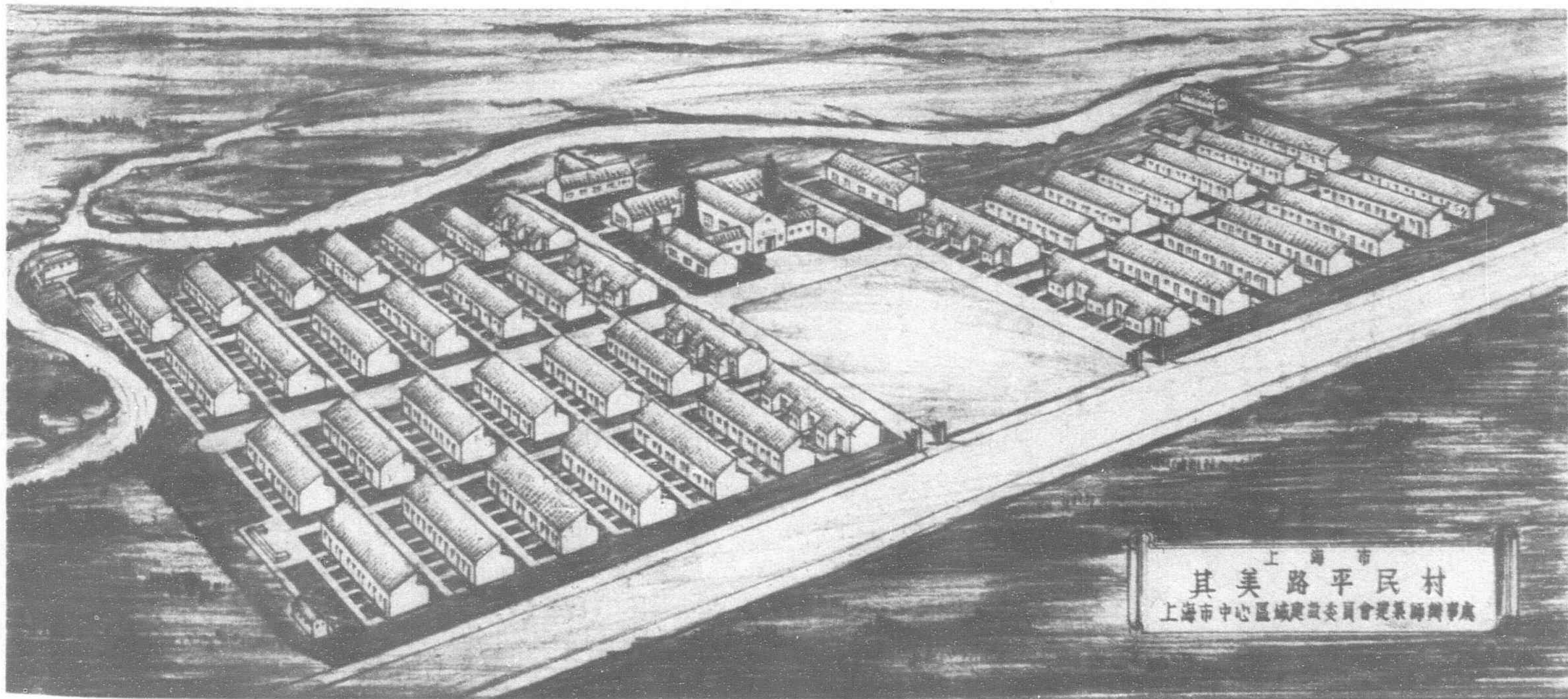
The members of the Executive Committee are as follows:—Mr. O. K. Yui, Chairman, Mr. J. K. Choy, Mr. S. Y. Wu, Mr. G. A. Fitch, The Rev. Father Jacquinet, Mr. Y. W. Jen, Mr. C. V. Starr, Brigadier-Gen. Wm. Darby, and Col. M. T. Tchou. From this list of names it is obvious that the Commission embodies an international effort to better the conditions of the masses of Shanghai. Every member has shown a fine spirit in fostering the plans of the Commission.



The Labor Welfare Commission and guests at the formal opening of the village on Chi Mei Road

A number of projects for helping the poor have been proposed and studied. The Commission hopes to carry them out one by one in the future. The housing project is probably the most important. For this housing project the City Government has set aside \$1,000,000 silver. With this fund the Commission has built four model villages at Chi Mei Road, Chungshan Road, Tai Mo Bridge and Pao Sen Road. These four villages provide one thousand houses for families and eight dormitories for single people. There are 214 "A" type houses (see illustrations) and 36 "B" type houses at the Chi Mei Road village; 252 "A" type houses at the Pao Sen Road village; 330 "A" type houses at the Chungshan Road village; 160 "A" type houses and 8 "B" type houses at the Tai Mo Bridge village. In addition each village has two dormitories.

These houses are built five or six in a row. Each of the "A" type houses has a living room (about 13 by 11-ft.), kitchen, lavatory and upstairs sleeping accommodation. The "B" type house has one living room, one sleeping room, kitchen and lavatory, but without upstairs. All the houses, to a great extent, are fireproof, waterproof with plenty of sunlight and through draft. These



Showing the Workers' Village on Chi Mei Road



Types of mud and thatched huts in villages of workers which the Labor Welfare Commission hopes to replace with modern structures in model villages

plans were prepared by Mr. D. Y. Doon and the buildings were constructed by contractors under the supervision of the Bureau of Public Works.

The plans of the Commission do not end with the provision of adequate living accommodations. In each village there are

play-grounds for children as well as adults, a school building, a co-operative store, a tea-shop, a nursery, public lavatories and public bath houses. With such features these model villages should become a force for the advancement of the many hard-working but poverty-stricken people who are their tenants.

The plans of the model villages necessitate an elaborate social and educational program. Coming as they do from grass huts and other congested living quarters, the tenants cannot be ex-

pected to conduct themselves at first as befits their new conditions of living. The Commission felt, therefore, that social workers should be trained to induct them into these new conditions.

By means of a competitive examination the Commission selected from 183 candidates, 36 young men and women to enter a training course of five months beginning August, 1935. Most of these selected were either college graduates or have had some other type of higher education. Some of them have had experience along the lines of the social program proposed. They had twenty-three hours a week to this training, exclusive of field work. The practical courses include hygiene, village administration, child welfare, store management, recreation and many other necessary activities which call for competent teachers to be in charge.

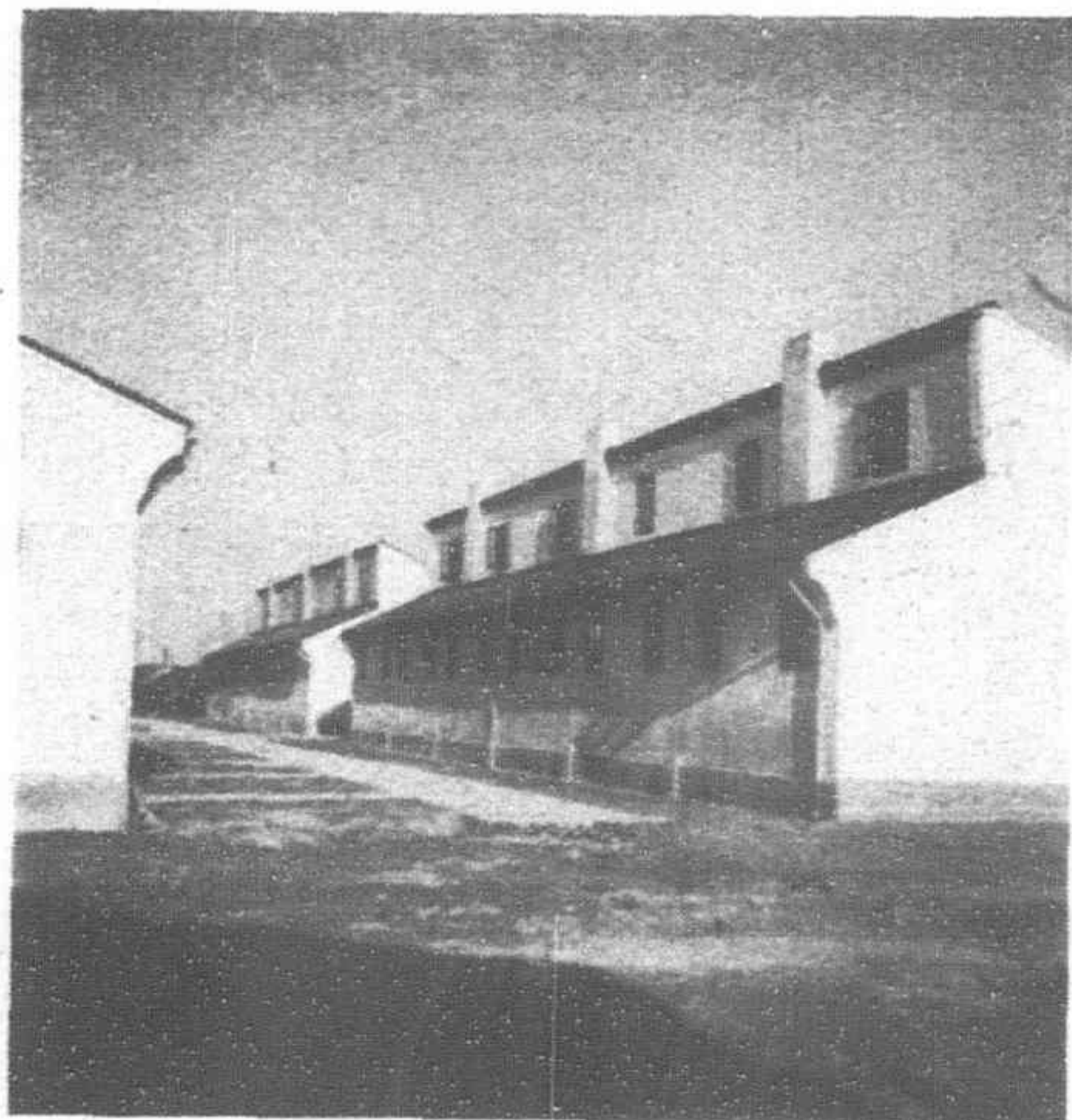
When the villages were near completion last December, the questions of rent and what class of people to be permitted to move in were quite important.

After examining the recent* studies of rentals of 610 similar houses and 217 grass huts made by the members of the Training Class of the Commission, a study of rents paid by ricscha pullers and factory girls in the International Settlement of Shanghai, and studies of other villages around the Settlement, led the Commission to the following decision, namely, monthly rents of \$3 for the "B" type house, \$4 for the "A" type house and \$1 per bed in the dormitories. It further was decided to admit only those with occupations and a maximum wage as head of a family of not more than \$30 a month. With this idea we thought that our model villages would serve for the benefit of the less privileged classes.

Now our villages have been completed and every house is occupied. There is a long list waiting for more houses. The public has expressed again and again the wish that the Commission should build more such houses so as to meet demands. Although our houses are so popular, not many of the occupants have come from the grass huts, as the Commission originally hoped for. Our

rents have to come down more if we want to meet the financial condition of this class of laborers or even the majority of ricscha pullers.

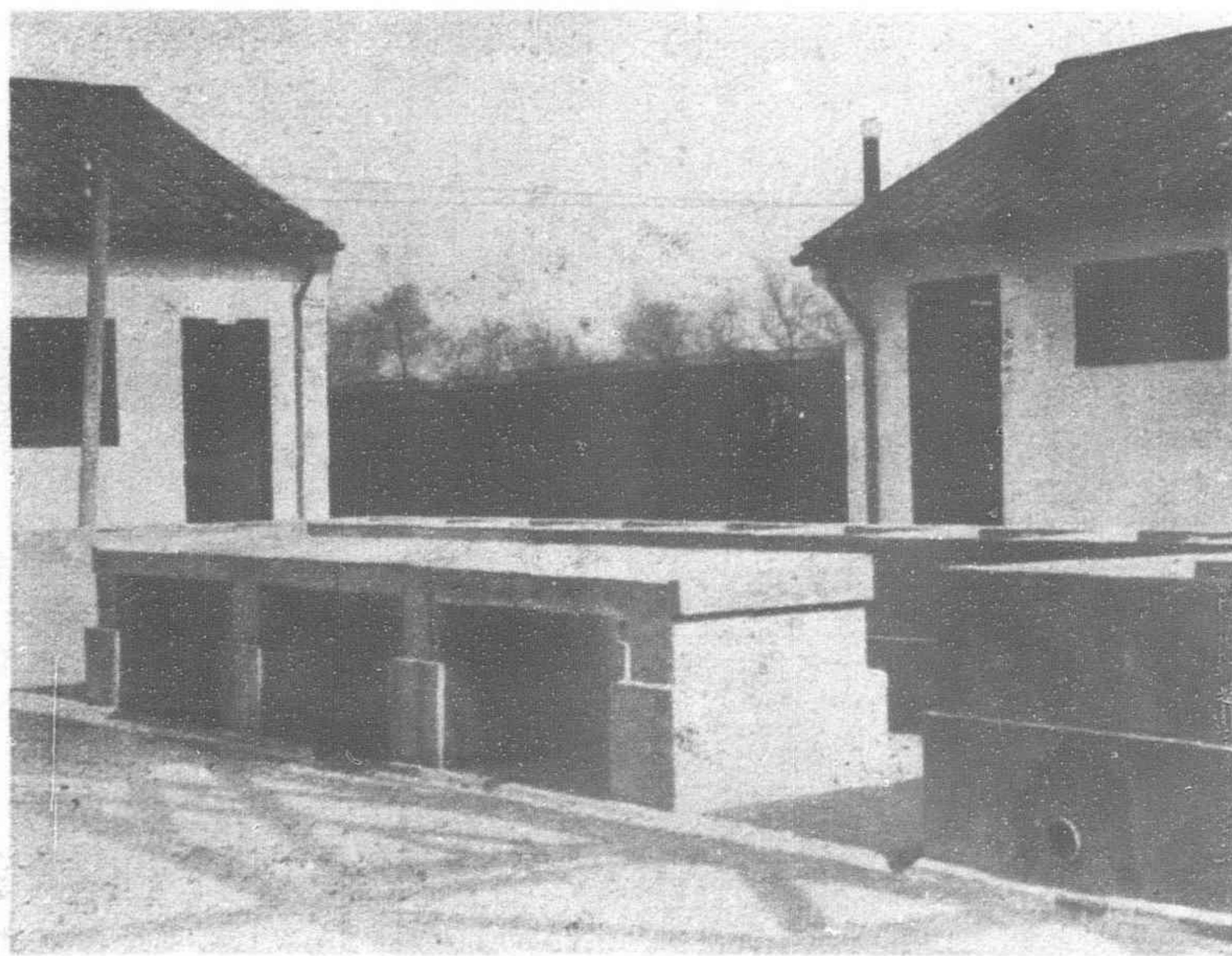
On the other hand the investment will not yield good interest on the basis of the rents as fixed. Take the case of the Chi Mei Road village. The total investment is about \$170,000. This includes the cost of the land, the construction of the buildings, all the furniture for the social center and two dormitories, the leveling and raising of the land and the installation of light and water supplies. The total rental receipt annually from all the houses and dormitories will be \$10,152 if all are occupied. This is about six per cent annual



Showing an "A" Type House



Showing a "B" Type House



A public lavatory in one of the Model Villages

*See table on next page.



The structure that houses the Social Center of the Workers' Village on Chi Mei Road



A row of the new dwellings in the Workers' Village on Chi Mei Road

interest on the total investment. It is inadequate to pay for the loan invested in these buildings. The current budget for light and water supplies, repairs and upkeep is quite large. Furthermore the Commission has planned for a good social and educational program in each village which also calls for a heavy budget. The Commission thus stands to lose money on the whole project which is a great benefit to those who are occupying the villages. These occupants have already expressed their delight and the general public has enthusiastically endorsed this idea of helping the poor.

Now the Commission is trying to experiment with some cheaper houses with a hope that each will not cost more than one hundred dollars (silver). If this experiment shows good results, the Commission may build one or two more villages with this kind of houses and will rent them out at cheaper rates. This will enable the mud hut dwellers to be tenants. Some of us are hoping that this will have a great bearing on the ultimate elimination of mud huts in Shanghai.

Since the opening of the model villages, our social workers have begun their social and educational programs. In each village a day school for boys and girls, a kindergarden, a co-operative store, night classes for adults, physical work and citizen training have been started. Besides all these activities, the village administration itself requires a good deal of time and energy in helping the occupants to adjust themselves to their new living conditions. Indeed this is an education by itself. These social centers are not only for the people within the villages. The schools as well as other activities, such as lectures and entertainments, are open to people around the villages. Since our social work is so important to this class of people in Shanghai, many public organizations have already expressed their willingness to co-operate with the Commission to enlarge the services. This and many other

expressions have shown that the general public of Shanghai, both Chinese and foreign, is deeply interested in this new project. This project to the mind of the writer is more educational than housing from now on. We hope this experiment will show good results.

*610 similar houses :

					Rentals per month :	
57	..	..	..	..	less than	\$3.00
180	..	..	..	..	..	\$3.10—\$ 5.00
229	..	..	..	..	..	\$5.10—\$10.00
144	..	..	..	..	..	more than \$10.00

217 grass huts :

					construction cost per hut :	
134	..	..	..	..	less than	\$30.00
46	..	..	..	..	..	\$50.00—\$100.00
37	..	..	..	..	more than	\$100.00

Those, who live in their own huts, have to pay an average annual rent on the land per hut. This is quite low, being about \$1.00 per month on the average.

A study of rents paid by ricsba pullers in the International Settlement of Shanghai shows the following figures:—Rental paid by each family per month, highest \$5.10, lowest \$0.90—an average of \$2.43. The average monthly rent paid by eighty-three girls working in a certain factory in the International Settlement is \$0.86.

In the three villages under the Bureau of Social Affairs of the City Government, the rent is \$2.50 per month per house for the "C" type and \$1.00 for the "D" type. The Y.M.C.A. model village at Pootung charges \$3.00 per month for the "A" type and \$4.00 for the "B" type house.



The training class of young men and women who are devoting their services to Social Welfare Work in the new Workers' Villages

Antimony Production in Hunan

THE mountainous province of Hunan, situated in the mid-Yangtze Valley in Central China, abounds in mineral deposits, and including antimony, wolfram, tin, arsenic, lead, zinc, gold, silver, copper, iron, manganese, quicksilver, coal, sulphur, gypsum and graphite. Although antimony is found in Kiangsi, Hupeh, Yunnan, Kweichow, Szechuen, Kwangtung and Kwangsi, Hunan stands far ahead of all other provinces production, about 90 per cent of China's entire antimony output coming from that province. The belt of antimony deposits in Hunan encloses a vast area, extending from Huanghsien in the extreme west, close to the Kweichow border, and inclining south-east passes through Chihkiang, Wukang and Hsinning, to north-west of Tungan, turning northward to Paoching and Hsinhua and then again westward to Fenghuang, via Süpu and Chenchi. From Fenghuang the deposits stretch north-east through Chiencheng, Kuchang, Yuanling and Anhua, stopping at Panchi, south-west of Iyang, whence the veins go due south to Kweiyang, and thence eastward to Chenhsien, where a northward turn leads to Pingkiang, via Tsehsing, Yunghsing, Anjen, Yuhsien Lingling and Liuyang. The antimony beds are entirely of quartzite, either in lumps of irregular size or in large masses.

From the geographical point of view the antimony deposits of Hunan may be divided into three main districts, central, western and southern. The central district includes Pingkiang, Liling, Liuyang, Iyang, Hsinhua, Anhua, Paoching, Hsinning and Wukang, the deposits at Hsinhua, Anhua and Paoching being the largest; the western district comprises Huanghsien, Süpu, Yuanling, Chenchi, Fenghuang, Chihkiang, Kuchang and Chiencheng; while Anjen, Changning, Tungan Kweiyang, Chenhsien, Chiyang, Hengshan, Hsintien, Tsehsing and Ichang are included in the southern district. Although these deposits cover an extensive area, the greater portion remain untouched. According to statistics compiled by the Hunan Provincial Department of Reconstruction in 1933, the areas in which mining operations have been started aggregate 78,099 ares.

The following are details of the two principal antimony deposits in Hunan.

Hsikuangshan Deposit, Hsinhua

This is located in the country of Antsi, about 60 *li* north-east of Hsinhua city. The name Hsikuangshan means "tin mountains," so-called because the antimony ore, when first discovered, was mistaken by the miners for tin, and as time went by the name remained unchanged. There are two rivers running through the area, the Tsekiang on the west and Lienshui on the east, and transportation to the marketing center, Changsha, depends primarily on these two rivers. The western route of 30 *li* overland leads to the Lengshuikiang, where sailing boats go about 520 *li* to Iyang, and then steam-launches run 240 *li* to Changsha. By the eastern route, 60 *li* by land leads to Lantien, Anhua, and then 200 *li* on the Lienshui to Hsianghsiang, and 90 *li* on the Hsiangkiang to Hsiangtan, which is only 90 *li* from Changsha, the Hsiangkiang being navigable by steam-launches all the year round. Freight is about \$30 per ton.

The deposit extends 10 *li* continuously from Changlungchieh, to Chilikiang, covering an area of about 400,000 square meters. The strata consist wholly of sedimentary rocks of the Carboniferous period. On the top lie sandstone and shale, of a thickness of more than 20 meters, then limestone, over 200 meters thick, and again shale and shaly limestone, over about 140 meters thick, after which comes the quartzite, having a thickness of about 50 meters. Antimony ore is found in the bottom stratum in the form of crystals, and the lodes have a varying length of from 180 to five meters, a width of from 40 to 3½ meters, and a thickness of from five to less than a meter. The ore contains an exceedingly high percentage of antimony, the content of other metals being only half per cent of iron and 0.15 per cent of arsenic, lead and copper.

Regarding the total amount of this deposit there are three different estimates. One put the aggregate reserve at no less than 24,000,000 tons of antimony ore, which, calculated at an average of

six per cent, are equivalent to approximately 1,500,000 tons of pure antimony. The second estimate made by a foreigner was 2,000,000 tons of pure antimony, while in the third estimate, made by the Hunan Geological Survey, the total deposit of ore was put at 27,000,000 tons, equal to about 1,600,000 tons of pure antimony at an average of six per cent of antimony content. It is also stated by the drafters of the last estimate that so far one-fourth of the deposits have been already mined, and that the remainder amounts to 2,000,000 tons of ore.

This antimony mine was discovered as far back as the Ming dynasty, and although mining was started, it was not long before operations were abandoned, and not until 1897 was work resumed by a mining bureau organized under the auspices of the local government. Meanwhile permission was also given to the public to start mining, but on account of inadequate plant and lack of capital the mining bureau incurred heavy losses and closed down, operations being left wholly in the hands of private individuals. The first private concern established was the Shan Lu Company, following which many others came into existence, the more important being the Lu Ho, Yu Chou Fu and Kung Fu Li, all engaged exclusively in mining. Not until 1905 was a Government refinery established, and the following year saw the opening of another refinery, Tsi I, and subsequently several others were started, including Pao Shan, Ting Hua, Yuan Ho, To I and Kung I. During the World War, when the demand for antimony was exceptionally brisk, the number of mining concerns in this area increased to more than 130, while the refineries exceeded 30, with a daily output of 120 tons of antimony regulus, worth \$120,000 at \$1,000 per ton. With the conclusion of the War, however, antimony prices fell sharply and the industry sustained a serious setback, both mining and refining concerns closing down in rapid succession. In 1932 the mining concerns had decreased to 60, and of this number only two were actually carrying on. Refineries still operating that year numbered 14, of which about a dozen had restricted production. Recent investigations reveal that about 16,000 miners and 1,000 refinery operatives remain at work.

The methods of mining followed at Hsikuangshan are very primitive. Ore is obtained by blasting, and is then sorted. At first the *ching sha* or "green" ore, the best in quality, is taken out and sent to the refinery, the remaining ore being hammered into fragments and sorted again, this procedure being repeated several times, the residue finally left after various hammerings being called "ash," which is sieved under water, when antimony bearing fragments sink to the bottom and are sent to be refined.

The refining of antimony is usually done by first crushing the "green" ore, which is burnt in a furnace for a day and a night, when the ore becomes regulus. With the introduction of Western methods the ore is burnt together with coke in a furnace, and the dense white vapor thus produced is passed through pipes and frozen, when it becomes antimony oxide, and either shipped to outports for export or refined into regulus. At Hsikuangshan only the Ting Hua concern uses the Western method, the others all following the old primitive methods.

Systematic working of this Hsikuangshan deposit dates back more than 35 years, and the annual output represents about 80 per cent of the whole production of Hunan province, and 66 per cent of the country's entire production. Although complete yearly records are not available, according to Mr. Wang Tao-shun, the estimated output between 1923 and 1928 was as follows:—

	Tons.						
1923	4,806
1924	8,015
1925	10,495
1926	10,640
1927	9,006
1928 (January-May)	4,014

The cost of production per ton of antimony regulus averages \$250, and for a ton of antimony oxide \$210, but is higher in some concerns. For instance, the net cost in Ting Hua of a ton of regulus in November, 1931, was \$254, and \$213 for a ton of antimony oxide,

but prices have slumped below net cost since 1928, thus explaining why most of the concerns at Hsikuangshan have closed down.

Panchi Deposit, Iyang

Situated in the south-west of Iyang, about 35 *li* from the city, Panchi is a very mountainous region. Although there is a river running into the Tsekiang, navigable by sailing boats from Wangsanchow to Chanchi during the high water season, transport from the mine to Chanchi (about 20 *li*) is now done by a light railway. From Chanchi to Changsha, a distance of 350 *li*, steam-launches are available throughout the year except in winter, when the water is too low, but with the completion of the Changsha-Iyang highway antimony is largely transported by this route instead of by water, freight ranging from \$5.50 to \$6.50 per ton.

The Panchi deposit is bordered by Shukuan, on the east, and Chungshihkeng on the west, by Shechialung on the south and Chihshihkou on the north, having an area of six square *li*. The ore has been formed by shale, sandstone, slate and phyllite of the Ordovician age, and the trend of the lodes south-east. Antimony ore is for the greater part found between the phyllite and phyllitic shale, containing 60 per cent of pure metal. So far two large lodes have been discovered, one inclining north-west at an angle from 45 to 75 degrees, and the other inclining in a similar direction at from 60 to 90 degrees. The former lode has a known length of 2,000 feet and a width of from 1 to 20 feet, while the known length of the latter is 1,600 feet and a width which varies from five inches to five feet, the two lodes being about 1,500 feet apart. Although the former lode has a larger area than the latter, the percentage of antimony content is lower, being two against 25 per cent. According to an estimate by the Hunan Geological Survey, this reserve is estimated at 929,250 tons, containing 149,800 tons of pure antimony.

This deposit was discovered about 50 years ago and mining operations were first carried out by a Government enterprise known as the Chiu Tung Mining Company. Not proving profitable, the undertaking subsequently passed into private ownership in 1900 under the name of Chiu Tung, later amalgamated with the Hua Chang Company, founded in 1908, engaged both in mining and refining. During the Great War the company made considerable profits, output then amounting to 1,000 tons monthly. To facilitating transportation, the company started in 1917 to build a light railway from Panchi to Taohuakiang, a distance of about 70 *li*, but after the war trade was very depressed and the company got into serious difficulties, with the result that the light railway stopped at Wangsanchow, only 20 *li* having been opened to traffic. According to investigations made in 1931, there were about 800 workers still engaged at Panchi.

Prior to 1924 the antimony output from Panchi consisted solely of ore, but since then refineries began to be established, and antimony regulus and oxide are now produced.

Recent investigations show that an average of 700 tons of antimony ore are now mined monthly, which give 70 tons of regulus, 70 tons of oxide and 20 tons of crude antimony. The net cost of mining a ton of ore is \$20, while a ton of regulus is worth \$240.

Antimony Refining Industry

Antimony being the chief mineral product of Hunan, the metal refineries in the province are mostly engaged in handling antimony. Their establishment dates back to 1908, when the Hua Chang was organized in Iyang. Subsequently many others were started, but their activities were confined to producing crude antimony and oxide only, the refining of regulus being then monopolized by Hua Chang. Not until 1913, when an improved method of refining regulus by native-made clay furnaces was invented, did this practice begin to be followed by other refineries. Although their output was somewhat inferior in quality to that turned out by Hua Chang, the lower cost enabled them to carry on operations. Subsequently the number of refineries using the improved gradually increased, and the export of regulus exceeded that of crude antimony. During the World War the demand abroad for antimony was so keen that the refining industry in Hunan enjoyed unprecedented prosperity, but this boom proved shortlived, as after the war prices slumped heavily and the refineries using Western methods were so seriously affected that all were compelled to close down, leaving refining to those concerns using the improved native method. Investigations made in 1933 reveals that refineries now operating in Hunan number 48, less than

half the total in former days. The center of the industry in Hsinhua, where 31 out of the 48 refineries are located. The remainder are distributed as follows: six in Anhua, three in Iyang, three in Hsining, two in Paoching, and one each in Tungan, Hsianghsiang and Ichang.

Export Shipments

The entire antimony production of Hunan is shipped to Shanghai for export, and figures begin to appear in the Customs returns for 1902, when antimony ore was exported in rather small quantity. During the World War there was a large export business done, shipments in 1916 amounting to 334,000 piculs, rising beyond 546,000 piculs in 1917. After the War exports from Hunan steadily dwindled, and although a revival was witnessed during the years from 1925 to 1929, another decline then followed and still prevails.

At first antimony ore was the only export line, and the total volume steadily increased year after year until 1914, when exports amounted to 156,979 piculs, valued at 255,030 Haikuan taels, the highest figure ever recorded. From that year ore exports began to decrease and entirely disappeared from the Customs returns after 1923. Meanwhile exports of both regulus and crude antimony had gradually risen, the former amounting to 262,606 piculs in 1918, and the latter to 320,766 piculs in 1917. From 1918 the export of crude antimony gradually decreased while trade in antimony regulus increased as a result of general adoption of the improved native method of refining, shipments rising from 259,807 piculs in 1925 to 294,075 piculs in 1927 and to 308,616 piculs in 1929. During recent years, though export business has been much affected by the worldwide economic depression, regulus exports are far larger than those of crude antimony.

The largest market for Hunan antimony is the United States, an average of about 80 per cent of American antimony imports being supplied by China, and over 90 per cent China's entire exports comes from Hunan province. Although the American import of antimony has been declining during recent years, China's share of the trade shows an increase.

Antimony Prices

After the outbreak of war in 1914, when regulus prices in Changsha passed the mark of \$1,000 per ton, production reached its height in Hunan, but soon after the conclusion of the war prices dropped heavily, a ton of regulus being sold in 1919 at less than \$100, a huge drop of \$900 from 1914. By December, 1919, when antimony stocks in Hunan were exhausted, prices recovered to about \$300 a ton, advancing to \$390 in April, 1925. When quotations suddenly rose to \$780 per ton in November an enormous increase was seen in output, but in the spring of 1926, owing to excessive supply over demand, prices again dropped, causing a considerable reduction in output. Although the market during recent years has shown no improvement, an upward tendency has been witnessed in prices since the opening of 1934, this being probably due to the fact that most nations are taking more antimony for the manufacture of munitions.

Aerial Development in Ceylon

With a view to the possible development of an inland air service, it is understood that the authorities will shortly initiate surveys of sites for landing grounds at or near Nuwara Eliya, Kandy, Diyatalawa, Anuradhapura and Jaffna.

The selection of suitable sites at these places, it is learned will be made by the air officer who is expected in Ceylon in July to take up the post of Aerodrome Officer at Ratmalane.

The work of selecting and surveying such sites in different parts of the country is expected to occupy about one whole year, and is an essential preliminary to the organization of an inland air service.

These preliminaries will not involve any additional expenditure, as it will be part of the routine work of the Survey Department.

The question as to whether an inland air service in Ceylon should be run by the Government or whether a private company should be allowed to inaugurate and run such a service, it is learned, will be decided by the Air Advisory Board which is to be appointed in the near future.

Engineering Notes

MINING

ANTIMONY DEPOSITS.—Rich deposits of antimony have been discovered at Hingkw, once the rendezvous of bandits in Southern Kiangsi.

IRON MINES SOLD.—The purchase of the British-owned Tamagan iron mines in Kelantan, Malayan Peninsula, has been concluded by the Japan Steel Tubing Co., says a Tokyo report. A subsidiary, capitalized at Y.1,000,000, will be formed early next year to operate the mines.

WOLFRAM OUTPUT.—The output of the wolfram mines in southern Kiangsi has been increasing rapidly since readjustment was instituted by the Kiangsi Provincial Government a few months also. It is also reported that the China Development Finance Corporation is to exploit the coal mines at Taiho, central Kiangsi.

REPORT DENIED.—Japanese reports to the effect that the British shareholders of the Kailan Mines intend to sell to Japanese, or to the South Manchuria Railway Company, are emphatically denied by a spokesman of the Administration. The shares valued at \$28,000,000 are owned by Chinese and British shareholders equally.

MINES IN FUKIEN.—Mr. Aw Baw-haw (Hu Wen-hu), the Singapore millionaire, is planning to open the mines in Yungting, southern Fukien near the Kwangtung border, Mr. Aw is now soliciting subscriptions of capital for the project among the overseas Chinese industrialists. According to the plan, a light railway will be built connecting Yungting with Tsangchow to facilitate communication and transportation of the outputs of the mines.

TO NATIONALIZE MINES.—For the purpose of centralizing operations, the Ministry of Industry has decided to nationalize the following mines: The iron mines in Ningsiang and Chaling (Hunan); copper mines in Yunglieh (Yunnan); manganese mines in Lohping (Kiangsi); coal and petroleum mines in Shaoyang (Hunan); and the petroleum mines in Tzechung (Szechuen) and Yungping (Yunnan). Up to date, a total of thirty mines is being operated by the Ministry throughout the country.

COAL GRABS FOR SINGAPORE.—Instead of coolie gangs with baskets, mechanical grabs may soon coal steamers in Singapore. A scheme for the installation of the latest mechanical coaling appliances has been put before the Chamber of Commerce and received sympathetic consideration. It is noted that there has been a substantial drop in the number of coal-fired ships berthing at Singapore. Last year, according to Harbor Board statistics, only 39 per cent of the ships berthing were coal-burners, oil-burners having increased to 61 per cent. This caused a corresponding decline in the number of colliers visiting Singapore, and in the imports of coal to the Harbor Board premises.

SHIPPING

SOVIET PURCHASES.—It is understood that the Soviet representatives plan to place more orders for freighters, refrigerator ships, dredges and hopper barges.

CANTON DOCKYARD.—Plans have been mapped out by the Kwangtung provincial authorities for the construction of a large dockyard at Canton. It will be located at the old dockyard at Whampoa.

SIX NEW SHIPS.—The Ming Sen Industrial Company is reported to have ordered six new ships for service from Chungking to Hochuan, Kiating and Wanhsien. These vessels, to be placed into operation at the beginning of the year, will operate daily services.

FERRY AT HANKOW.—Peiping-Hankow and Canton-Hankow Railway Administrations are to arrange with the Planning Committee of the latter line for the institution of through traffic between the two railways by operating a ferry service across the Yangtze between Hankow and Wuchang.

SOVIETS BUY SHIPS.—Mitsubishi Shoji Kaisha has contracted with the Soviet Trade Representation to supply two oil tankers, each of 2,000 tons and 800 horse-power. The price is said to be Y.1,000,000. The ships will be built by the Yokohama Dock Company, which is shortly to be absorbed by Mitsubishi Heavy-Industries, Ltd.

TUG FOR MALAYA.—The first Diesel-engined tug ever built in Malaya has been launched at the shipyard of United Engineers, Ltd., Singapore. Christened the *Jugra*, she will be stationed at Port Swettenham, having been built to the order of the F.M.S. Railways. The *Jugra* has a length of 76-ft. overall and 70-ft. b.p., moulded beam of 16-ft. and moulded depth of 7-ft. 6-in. Her engine is of the Ruston Diesel, direct reversible six V.E.R.D. type, developing 275 h.p. and driving a single screw. Her hull is of steel.

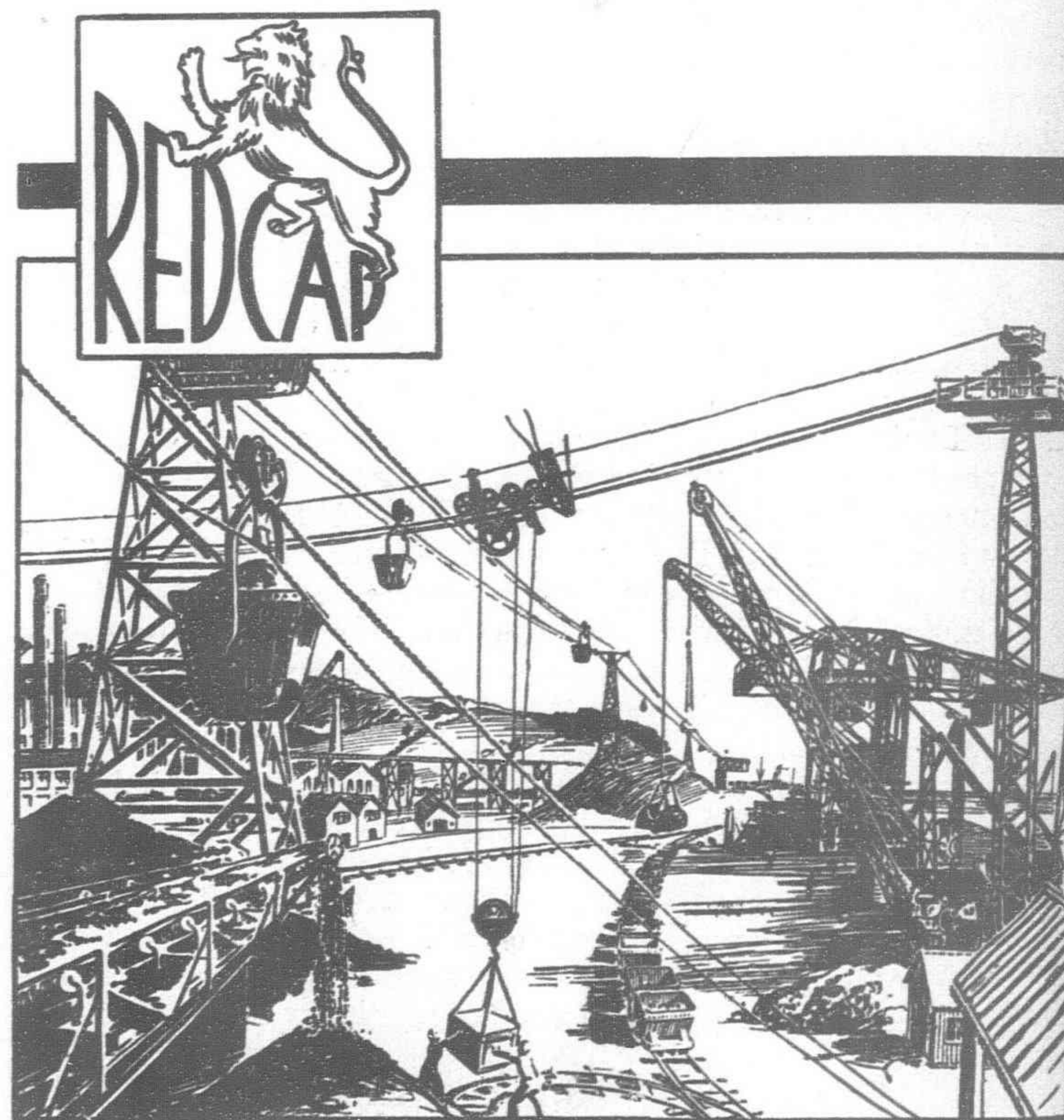
TSINGTAO DRY DOCK.—An important event in Tsingtao recently was the accommodation of the first foreign war vessel at the Tsingtao Dry Dock, namely, the Italian cruiser *Quarto*. It is understood that four Chinese steamers to be followed by four U.S.A. submarines and two other vessels of the same fleet will in due course also effect repairs at this addition to Tsingtao's harbor.

COMMUNICATIONS

NEW EASTERN AIR BASE.—Plans have been accepted for a new aerodrome at Fanling on British leased territory at Hongkong. It is expected that it will be ready toward the end of the year.

BURMA AND YANGTZE.—In return for concessions in fixing the border between Burma and Yunnan Province, the British mean to ask the right to open a trade route between Burma and the Yangtze Valley through Yunnan and Szechuen, says a Hongkong message.

RADIO FOR NANCHANG.—Preparations are being started in Nanchang for the erection of a large radio broadcasting station to supplement the smaller station of the Provisional Headquarters of the President of the Military Affairs Commission. The cost of construction has been fixed at \$50,000, and will be provided by the Provisional Headquarters and the Kiangsi Provincial Government in equal proportions.



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